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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

In Re DYNAMIC RANDOM ACCESS
 MEMORY (DRAM) ANTITRUST
 LITIGATION

Case No. M-02-1486-PJH
 MDL No. 1486

This Document Relates To:

Case No. C-05-02472

PETRO COMPUTER SYSTEMS, INC., et
 al.,

**THIRD AMENDED CLASS ACTION
 COMPLAINT**

Plaintiffs,

v.

MICRON TECHNOLOGY, INC., et al.,

Defendants.

Pursuant to the Court's January 29, 2008 Order, this Third Amended Complaint amends the Sixth Claim for Relief (unjust enrichment and disgorgement of profits) only. Claims dismissed by the January 29, 2008 Order without leave to amend remain in the Third Amended Complaint to preserve Plaintiffs' rights, although Plaintiffs will not pursue dismissed claims before this Court unless and until such time as the Court's ruling dismissing them is reversed. Moreover, Plaintiffs acknowledge that nothing is required from Defendants for the Court's January 29, 2008 Order to apply to this Third Amended Complaint.

This civil action for damages and injunctive relief is brought on behalf of Plaintiffs and all others similarly situated against the above-named Defendants, and demanding a trial by jury, complain and allege as follows:

I. INTRODUCTION

1. As alleged below, Defendants engaged in a comprehensive conspiracy to fix, raise, maintain or stabilize the prices of, or allocate the market for, DRAM.

2. During the Class Period, Defendants manufactured DRAM chips and assembled those loose chips into modules. Defendants sold both DRAM chips and DRAM modules to direct purchasers.

3. Defendants price-fixed both products, as alleged in more detail below, by near-daily communications at every level of the companies—from sales representatives to high-level executives—via telephone, email and personal contact, to coordinate their pricing to their customers. Defendants were not competing; they were cooperating to bilk consumers out of billions of dollars. As one employee put it in relation to the cozy relationship among the Defendants, "Love is in the air, I can feel it." Another put it this way: "Prices rise. We are happy and we all buy new cars."

4. The sheer number of DRAM executives who participated in the exchange of price information is extraordinary. More than 100 Defendant employees participated in conspiratorial conduct during the class period. Such conduct includes, but is not limited to, providing or receiving competitor-provided pricing information, production capacity and technology roadmaps. The information exchanged includes everything from discussions

1 relating to general market conditions to hyper-detailed market allocation. Moreover,
 2 implicated personnel served at nearly level of employ, a strong indication of the depth to
 3 which the DRAM conspiracy permeated the culture of all Defendants.

4 5. Defendants were well-aware of the illegality of their conduct. In fact, one
 5 Elpida employee warned another not to put the price-fixing information in emails: "I am just
 6 looking out for you. . . I don't think you'd look too good in a pale blue jumpsuit." In
 7 December 2006, that Elpida employee, D. James Sogas, pleaded guilty to criminal price-
 8 fixing charges and spent seven months in prison, but in an orange jumpsuit.

9 6. Plaintiffs are indirect purchasers of this price-fixed DRAM, either by
 10 purchasing a computer with DRAM pre-installed, or be purchasing a DRAM module to be
 11 added in to a computer. Because direct purchasers passed through the overcharges to the
 12 indirect purchasers, the prices they paid for computers and DRAM modules were directly and
 13 measurably increased by Defendants' illegal conduct. Defendants intended that the DRAM
 14 sold to direct purchasers would be ultimately purchased in the form of Computers by end-
 15 buyers; Defendants knew that their price increases would be passed on by OEMs and
 16 retailers to end-buyers.

17 **II. JURISDICTION AND VENUE**

18 7. This complaint is filed under Section 16 of the Clayton Act, 15 U.S.C. § 26, to
 19 obtain injunctive relief for violations of Section 1 of the Sherman Act, 15 U.S.C. § 1, to
 20 recover damages under state antitrust and consumer protection laws, and to recover the costs
 21 of suit, including reasonable attorneys' fees, for the injuries that plaintiffs and all others
 22 similarly situated sustained as a result of the Defendants' violations of those laws.

23 8. The Court has jurisdiction over the federal claim under 28 U.S.C. §§ 1331 and
 24 1337. The Court has jurisdiction over the state law claims under 28 U.S.C. § 1367 because
 25 those claims are so related to the federal claim that they form part of the same case or
 26 controversy. The Court also has jurisdiction over the state law claims under 28 U.S.C. §
 27 1332 because the amount in controversy for the Class exceeds \$5,000,000, and there are
 28 members of the Class who are citizens of a different state than the Defendants.

1 and Hewlett-Packard.

2 16. As used herein, the term “Module Maker” means those manufacturers, other
3 than Defendants, that assembled loose DRAM chips into DRAM modules.

4 17. As used herein, the term “Class Period” means the time period beginning
5 April 1, 1999 and continuing until at least December 31, 2002.

6 **IV. THE PARTIES**

7 **A. The Plaintiffs**

8 18. Plaintiff Petro Computer Systems, Inc., a California corporation, indirectly
9 purchased DRAM from one or more of the Defendants during the Class Period, for use in
10 manufacturing electronic devices for resale, by purchasing eight computers from Compaq
11 each with DRAM modules totaling 64 MB, five computers from Compaq each with DRAM
12 modules totaling 128 MB, one computer from Compaq with DRAM modules totaling 256
13 MB, one computer from Hewlett Packard with DRAM modules totaling 128 MB, one
14 computer from Acer with DRAM modules totaling 32 MB, one computer from Hewlett
15 Packard with DRAM modules totaling 512 MB, and one DRAM module with 128 MB, and
16 was injured as a result of Defendants’ illegal conduct.

17 19. Plaintiff Gary Petersen, a California resident, indirectly purchased DRAM
18 from one or more of the Defendants during the Class Period, for use in manufacturing
19 electronic devices for resale, by purchasing 14 computers from Dell each with DRAM
20 modules totaling 128 MB, five computers from Dell each with DRAM modules totaling 256
21 MB, one computer from Dell with DRAM modules totaling 2 GB, one computer from
22 Toshiba with DRAM modules totaling 256 MB, and approximately 250 modules of various
23 sizes, was injured as a result of Defendants’ illegal conduct.

24 20. Plaintiff Pamela Uglem, a Minnesota resident, indirectly purchased DRAM
25 from one or more of the Defendants during the Class Period, by purchasing a Hewlett
26 Packard computer with DRAM modules, and a Gateway computer with DRAM modules, for
27 her own personal use, and was injured as a result of the Defendants’ illegal conduct.

28 21. Plaintiff Dale Dickman, a Texas resident, indirectly purchased DRAM from

1 one or more of the Defendants during the Class Period, by purchasing two Dell computers
2 each with DRAM modules totaling 256 MB, for his own personal use, and was injured as a
3 result of the Defendants' illegal conduct.

4 22. Plaintiff Michael Juetten, a California resident, indirectly purchased DRAM
5 from one or more of the Defendants during the Class Period, by purchasing a IBM model 590
6 computer with DRAM modules, for his own personal use, and was injured as a result of the
7 Defendants' illegal conduct.

8 23. Plaintiff Heather Delaney, a New York resident, indirectly purchased DRAM
9 from one or more of the Defendants during the Class Period, by purchasing an Apple
10 computer with DRAM modules totaling 512 MB, and from MacWarehouse a DRAM module
11 with 512 MB, for her own personal use, and was injured as a result of the Defendants' illegal
12 conduct.

13 24. Plaintiff Ben Stewart, a New York resident, indirectly purchased DRAM from
14 one or more of the Defendants during the Class Period, by purchasing an Apple computer
15 with DRAM modules totaling 512 MB, for his own personal use, and was injured as a result
16 of the Defendants' illegal conduct.

17 25. Plaintiff Johnson & Jennings, Inc., a California corporation, indirectly
18 purchased DRAM from one or more of the Defendants during the Class Period, by
19 purchasing from a white box computer maker seven computers with DRAM modules totaling
20 64 MB, three computers with DRAM modules totaling 128 MB, and four computers with
21 DRAM modules totaling 256 MB, for its own personal use, and was injured as a result of the
22 Defendants' illegal conduct.

23 26. Plaintiff G.C.A. Strategies, Inc. a California business entity, indirectly
24 purchased DRAM from one or more of the Defendants during the Class Period, by
25 purchasing one Sony Vaio computer with DRAM modules totaling 64 MB, and from a white
26 box computer maker two computers with DRAM modules totaling 32 MB, one computer
27 with DRAM modules totaling 64 MB, and one computer with an unknown quantity of
28 DRAM modules, and who additionally purchased one DRAM module for its own personal

1 use, and was injured as a result of Defendants' illegal conduct One Hitachi computer with
2 DRAM modules.

3 27. Plaintiff Robert Cademy, a California resident, indirectly purchased DRAM
4 from one or more of the Defendants during the Class Period, by purchasing DRAM modules,
5 for his own personal use, and was injured as a result of the Defendants' illegal conduct.

6 **B. The Defendants**

7 28. Defendant Micron Technology, Inc. is a Delaware Corporation with its
8 principal place of business at 8000 South Federal Way, Boise, Idaho. During the time period
9 covered by this Complaint, Defendant Micron Technology, Inc. manufactured, sold and
10 distributed DRAM throughout the United States.

11 29. Defendant Micron Semiconductor Products, Inc. is a wholly owned and
12 controlled subsidiary of Defendant Micron Technology, Inc. with its principal place of
13 business at 8000 South Federal Way, Boise, Idaho. During the time period covered by this
14 Complaint, Defendant Micron Semiconductor Products, Inc. sold and distributed DRAM to
15 customers throughout the United States, including sales through its Crucial Technology
16 division. Micron Technology, Inc., Micron Semiconductor Products, Inc. and the Crucial
17 Technology division are referred to collectively herein as "Micron."

18 30. Defendant Infineon Technologies AG is a German corporation with its
19 principal place of business at St. Martin-Str. 53, 81669, Munich, Germany. During the time
20 period covered by this Complaint, Defendant Infineon Technologies AG manufactured, sold
21 and distributed DRAM throughout the United States. On May 1, 2006, Infineon
22 Technologies AG carved-out its DRAM business as a separate company called Qimonda AG.

23 31. Defendant Infineon Technologies North America Corp. is a wholly owned and
24 controlled subsidiary of Infineon Technologies AG with its principal place of business at
25 1730 North First Street, San Jose, California. During the time period covered by this
26 Complaint, Defendant Infineon Technologies North America Corp. sold and distributed
27 DRAM to customers throughout the United States. Infineon Technologies AG, Infineon
28 Technologies North America Corp. and Qimonda AG are referred to collectively herein as

1 “Infineon.”

2 32. Defendant Hynix Semiconductor, Inc. is a business entity organized under the
3 laws of South Korea, with its principal place of business at SAN 136-1, Ami-Ri Bubal-eub,
4 Ichon-si, Kyongki-do, Korea. During the time period covered by this Complaint, Defendant
5 Hynix Semiconductor, Inc. manufactured, sold and distributed DRAM to customers
6 throughout the United States.

7 33. Defendant Hynix Semiconductor America, Inc. is a wholly owned and
8 controlled subsidiary of Defendant Hynix Semiconductor, Inc. with its principal place of
9 business at 3101 North First Street, San Jose, California. During the time period covered by
10 this Complaint, Defendant Hynix Semiconductor America, Inc. sold and distributed DRAM
11 to customers throughout the United States. Hynix Semiconductor, Inc. and Hynix
12 Semiconductor America, Inc. are referred to collectively herein as “Hynix.”

13 34. Defendant Samsung Electronics Co. Ltd. is a business entity organized under
14 the laws of South Korea, with its principal place of business at Samsung Main Building 250-
15 2 ga, Taepyung-ro Chung-gu, Seoul, Korea. During the time period covered by this
16 Complaint, Defendant Samsung Electronics Co. Ltd. manufactured, sold and distributed
17 DRAM to customers throughout the United States.

18 35. Defendant Samsung Semiconductor, Inc. is a wholly owned and controlled
19 subsidiary of Defendant Samsung Electronics Co. Ltd. with its principal place of business at
20 3655 North First Street, San Jose, California. During the time period covered by this
21 Complaint, Defendant Samsung Semiconductor, Inc. sold and distributed DRAM to
22 customers throughout the United States. Samsung Electronics Co. Ltd., and Samsung
23 Semiconductor, Inc. are referred to collectively herein as “Samsung.”

24 36. Defendant Mosel-Vitec, Corp. is a business entity organized under the laws
25 of Taiwan, with its principal place of business at No. 19 Li Hsin Road, Hsinchu Science
26 Based Industrial Park, Hsinchu, Taiwan, R.O.C.. During the time period covered by this
27 Complaint, Defendant Mosel-Vitec, Corp. manufactured, sold and distributed DRAM to
28 customers throughout the United States.

1 37. Defendant Mosel-Vitellic (USA), Inc. is a wholly owned and controlled
2 subsidiary of Mosel-Vitellic Corp. with its principal place of business at 3910 North First
3 Street, San Jose, California. During the time period covered by this Complaint, Defendant
4 Mosel-Vitellic (USA), Inc. sold and distributed DRAM to customers throughout the United
5 States. Mosel-Vitellic, Corp. and Mosel-Vitellic (USA), Inc. are referred to collectively herein
6 as “Mosel-Vitellic.”

7 38. Defendant Nanya Technology Corporation is a business entity organized
8 under the laws of Taiwan, with its principal place of business at HWA YA Technology Park,
9 669, Fu Hsing 3rd Rd., Kueishan, Taoyuan, Taiwan, R.O.C.. During the time period covered
10 by this Complaint, Defendant Nanya Technology Corporation manufactured, sold and
11 distributed DRAM to customers throughout the United States.

12 39. Defendant Nanya Technology Corporation USA, Inc. is a wholly owned and
13 controlled subsidiary of Nanya Technology Corporation with its principal place of business
14 at 675 E. Brokaw Road, San Jose, California. During the time period covered by this
15 Complaint, Defendant Nanya Technology USA, Inc. sold and distributed DRAM to
16 customers throughout the United States. Nanya Technology Corporation and Nanya
17 Technology Corporation USA, Inc. are referred to collectively herein as “Nanya.”

18 40. Defendant Winbond Electronics Corporation is a business entity organized
19 under the laws of Taiwan, with its principal place of business at 4, Creaton Road, 111,
20 Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C. During the time period covered by
21 this Complaint, Defendant Winbond Electronic Corporation manufactured, sold and
22 distributed DRAM to customers throughout the United States.

23 41. Defendant Winbond Electronics Corporation America, Inc., is a wholly owned
24 and controlled subsidiary of Winbond Electronic Corporation with its principal place of
25 business at 2727 North First Street, San Jose, California. During the time period covered by
26 this Complaint, Defendant Winbond Electronics Corporation America, Inc. sold and
27 distributed DRAM to customers throughout the United States. Winbond Electronics
28 Corporation and Winbond Electronics Corporation America, Inc. are referred to collectively

1 herein as “Winbond.”

2 42. Defendant Elpida Memory, Inc. is a business entity organized under the laws
3 of Japan, with its principal place of business at Sumitomo Seimei Yaesu Bldg., 3F, 2-1 Yaseu
4 2-chome, Chuo-ku, Tokyo, Japan. During the time period covered by this Complaint,
5 Defendant Elpida Memory, Inc. manufactured, sold and distributed DRAM to customers
6 throughout the United States.

7 43. Defendant Elpida Memory (USA), Inc. is a wholly owned and controlled
8 subsidiary of Elpida Memory, Inc. with its principal place of business at 2001 Walsh
9 Avenue, Santa Clara, California. During the time period covered by this Complaint,
10 Defendant Elpida Memory (USA) Inc. sold and distributed DRAM to customers throughout
11 the United States. Elpida Memory, Inc. and Elpida Memory (USA), Inc. are referred to
12 collectively herein as “Elpida.”

13 44. Defendant NEC Electronics America, Inc. (“NEC”) is a wholly owned and
14 controlled subsidiary of NEC Electronics Corporation, with its principal place of business at
15 2880 Scott Boulevard, Santa Clara, California and its manufacturing plant in Roseville,
16 California. During the time period covered by this Complaint, Defendant NEC sold and
17 distributed DRAM to customers throughout the United States.

18 **C. Co-Conspirators**

19 45. Various others, presently unknown to Plaintiffs, participated as co-
20 conspirators with the Defendants in the violations of law alleged in this Complaint and have
21 engaged in conduct and made statements in furtherance thereof.

22 46. The acts charged in this Complaint have been done by Defendants and their
23 co-conspirators, or were authorized, ordered or done by their respective officers, agents,
24 employees or representatives while actively engaged in the management of each Defendant’s
25 business or affairs.

26 47. Each of the Defendants named herein acted as the agent or joint venturer of or
27 for the other Defendants with respect to the acts, violations and common course of conduct
28 alleged herein. Each Defendant which is a subsidiary of a foreign parent acts as the sole

United States agent for DRAM made by its parent company.

V. CLASS ACTION ALLEGATIONS

48. Plaintiffs bring this suit as a class action pursuant Rules 23(b)(2) and 23(b)(3) of the Federal Rules of Civil Procedure, on behalf of themselves and a Plaintiff Class (“the Class”) composed of and defined as follows:

All persons and entities residing in the United States, who, from April 1, 1999 through December 31, 2002, purchased DRAM indirectly from the Defendants for end use in Computers.

Specifically excluded from this Class are the Defendants; the officers, directors or employees of any Defendant; any entity in which any Defendant has a controlling interest; and any affiliate, legal representative, heir or assign of any Defendant.

Also excluded are any federal, state or local governmental entities, any judicial officer presiding over this action and the members of his/her immediate family and judicial staff, and any juror assigned to this action.

49. This action has been brought and may be properly maintained as a class action pursuant to Rule 23 of the Federal Rules of Civil Procedure for the following reasons:

- a. The Class is ascertainable and there is a well-defined community of interest among the members of the Class;
- b. Based upon the nature of the trade and commerce involved and the number of indirect purchasers of DRAM, Plaintiffs believe that the members of the Class number in the thousands, and therefore is sufficiently numerous that joinder of all Class members is not practicable;
- c. Plaintiffs' claims are typical of the claims of the members of the Class because Plaintiffs indirectly purchased DRAM from one or more of the Defendants or their co-conspirators, and therefore Plaintiffs' claims arise from the same common course of conduct giving rise to the claims of the members of the Class and the relief sought is common to the Class;
- d. The following common questions of law or fact, among others, exist as

1 to the members of the Class:

- 2 i. whether Defendants formed and operated a combination or
3 conspiracy to fix, raise, maintain or stabilize the prices of, or
4 allocate the market for, DRAM;
- 5 ii. whether the combination or conspiracy caused DRAM prices to
6 be higher than they would have been in the absence of
7 Defendants' conduct;
- 8 iii. the operative time period of Defendants' combination or
9 conspiracy;
- 10 iv. whether Defendants' conduct caused injury to the business or
11 property of Plaintiffs and the members of the Class;
- 12 v. the appropriate measure of the amount of damages suffered by
13 the Class;
- 14 vi. whether Defendants' conduct violates Section 1 of the Sherman
15 Act;
- 16 vii. whether Defendants' conduct violates Sections 16720 and
17 17200 of the California Business and Professions Code; and
- 18 viii. the appropriate nature of class-wide equitable relief.
- 19 e. These and other questions of law or fact which are common to the
20 members of the Class predominate over any questions affecting only
21 individual members of the Class;
- 22 f. Plaintiffs will fairly and adequately protect the interests of the Class in
23 that Plaintiffs have no interests that are antagonistic to other members
24 of the Class and have retained counsel competent and experienced in
25 the prosecution of class actions and antitrust litigation to represent
26 themselves and the Class;
- 27 g. A class action is superior to other available methods for the fair and
28 efficient adjudication of this litigation since individual joinder of all

1 damaged Class members is impractical. The damages suffered by
 2 individual Class members are relatively small, given the expense and
 3 burden of individual prosecution of the claims asserted in this
 4 litigation. Thus, absent the availability of class action procedures, it
 5 would not be feasible for Class members to redress the wrongs done to
 6 them. Even if the Class members could afford individual litigation,
 7 the court system could not. Further, individual litigation presents the
 8 potential for inconsistent or contradictory judgments and would greatly
 9 magnify the delay and expense to all parties and to the court system.
 10 Therefore, the class action device presents far fewer case management
 11 difficulties and will provide the benefits of unitary adjudication,
 12 economy of scale and comprehensive supervision by a single court;

- 13 h. Defendants have acted, and refused to act, on grounds generally
 14 applicable to the Class, thereby making appropriate final injunctive
 15 relief with respect to the Class as a whole; and
- 16 i. In the absence of a class action, Defendants would be unjustly
 17 enriched because they would be able to retain the benefits and fruits of
 18 their wrongful conduct.

19 50. The Claims in this case are properly certifiable under the laws of the State of
 20 California.

21 **VI. NATURE OF TRADE AND COMMERCE**

22 51. Throughout the period of time covered by this Complaint, Defendants and
 23 their co-conspirators engaged in the business of marketing and selling DRAM throughout the
 24 United States. Worldwide sales of DRAM totaled approximately \$14 billion in 2001 with the
 25 United States accounting for a significant share of the market. There are more than \$5 billion
 26 of DRAM sales annually in the United States. The top six manufacturers control over 90%
 27 of the worldwide market.

28 52. The Defendants are the largest manufacturers and sellers of DRAM in the

1 United States market. More than seventy percent (70%) of the DRAM market is controlled
2 by Defendants Micron, Infineon, Hynix and Samsung and their wholly owned subsidiaries.
3 Between 1995 and 2002, the number of DRAM manufacturers that controlled 70% of the
4 market decreased from more than ten to just these four. Defendants Mosel-Vitelic, Elpida,
5 Nanya and Winbond are DRAM manufacturers with a substantial portion of the remaining
6 30% of the market.

7 53. California is the largest market in the world for DRAM and is the world-wide
8 center of the computer industry and other industries that depend upon the DRAM markets.
9 Statements concerning the prices and market conditions for DRAM were disseminated by
10 Defendants from and into California on a regular and continuous basis. Defendants'
11 contract, combination, trust or conspiracy was centered in, carried out, implemented from
12 and perfected in California. All members of the Class, whether or not California residents,
13 are entitled to recover under California law.

14 **What is DRAM?**

15 54. DRAM is the dominant, most common form of Computer memory. "Random
16 Access Memory" means that the data, stored in the form of 0s and 1s, can be accessed
17 directly from any part of the memory, rather than having to proceed sequentially from some
18 starting place. DRAM is called "dynamic" because it must have its storage cells refreshed or
19 given a new electronic charge every few milliseconds.

20 55. DRAM has no free-standing use. In other words, it must be inserted into a
21 device such as a computer to serve any function.

22 56. Likewise, no computer uses a single loose DRAM chip or a collection of loose
23 chips as its memory; as explained below, all DRAM purchased by Class Members was in
24 module form.

25 57. DRAM is a commodity. It has been described as "like milk or bread," and
26 that it "varies little from manufacturer to manufacturer." In his testimony before the
27 Congressional House Banking Committee, the CEO of Micron, Steve Appleton, testified that
28 "DRAM is a commodity."

1 58. During the Class Period, Defendants manufactured loose chips and assembled
2 those chips into modules. Defendants price-fixed both chips and modules, as alleged in more
3 detail below, by near-daily communications at every level of the companies—from
4 salespersons to high-level executives—via telephone, email and personal contact, to
5 coordinate their pricing to their customers, restrict supply and manipulate the spot market
6 prices.

7 **How is DRAM manufactured and sold to direct purchasers?**

8 59. The DRAM manufacturing market is dominated by a handful of leading
9 manufacturers – namely, Defendants in this case.

10 60. Defendants run manufacturing factories called fabrication plants. Those
11 fabrication plants make “wafers” that are cut into individual chips, called “dice.” Once those
12 dice have the electronics printed on them, the chip is complete.

13 61. Because DRAM has no independent utility, the value of, and thus demand for,
14 DRAM is derived through its storage capabilities for products that need volatile memory.

15 62. Most DRAM chips are assembled by a Defendant (or its contract labor) into
16 DRAM modules, in order to be used in computers. DRAM modules are a packaging option
17 necessitated by, and developed for, the computer segment of the electronics market.

18 63. DRAM is sold in modular form to enable an OEM to determine during of the
19 manufacturing cycle the amount of DRAM to install in a computer. Likewise, DRAM is sold
20 in modular form to retailers so that end-buyers can easily upgrade their computers by adding
21 DRAM modules. As stated by Michael Bokan, Director of Sales for Defendant Micron:
22 “DRAM is packaged in memory modules for PCs and servers to allow for easy upgrading
23 and multiple configurations.”

24 64. A DRAM module is made from DRAM chips, a printed circuit board
25 (“PCB”), and a bonding agent to attach the chips to the PCB. The vast majority of the cost of
26 a DRAM module is the cost of chips.

27 65. DRAM module prices are slightly higher than the sum of prices of the DRAM
28 chips used to make the module; the difference reflects the cost of assembling the chips into a

1 module. For example, during the Class Period, Kingston, the world's largest module maker,
2 in 2002 offered to assemble Hynix's chips into modules for Hynix's direct purchaser OEMs
3 Compaq, Dell, Gateway and IBM. The PCB cost was \$1.70 per module; the other totaled
4 46¢ to 82¢ per module. Labor and overhead was between 64¢ and \$1.38 per module. Thus,
5 Kingston charged \$3.05 to \$4.10 to assemble 128MB or 256MB modules. At the time of this
6 offer, a 256MB module was priced to IBM at approximately \$38. Thus, a 256MB module
7 would cost \$38, of which \$3.27 was the cost of assembly and \$34.73 was the cost of the
8 chips.

9 66. The close relationship between modules and chips is reflected by the price
10 parity between them. At any given time, the price of modules was only slightly above the
11 aggregate price of the loose chips mounted on the PCB.

12 67. A substantial portion of Defendants' DRAM sales for computing purposes to
13 direct purchasers were in module form. As explained below, all Class Members purchased
14 DRAM modules, either as "Base" DRAM modules or "Added" DRAM modules. No Class
15 Members purchased DRAM chips.

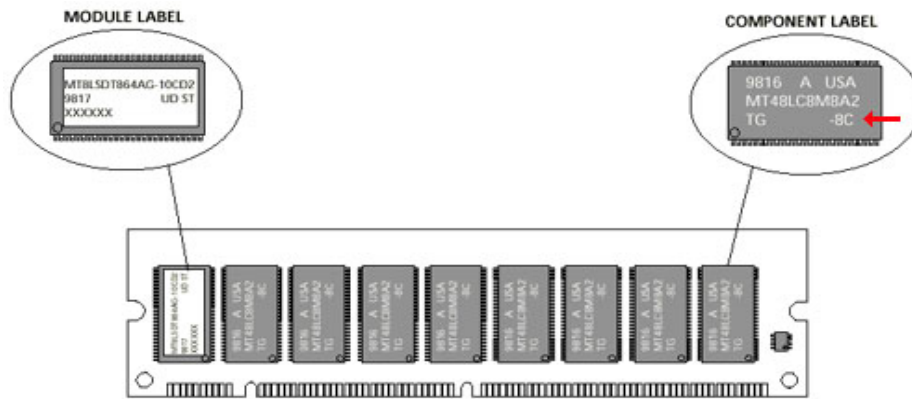
16 **What does a DRAM module look like?**

17 68. DRAM used in computers is a commodity product, with functionally
18 equivalent products available from several of the Defendants. Because computer makers and
19 the Defendants jointly set industry-standard specifications and sizes, most sales of DRAM
20 chips or modules were only a few standard types. The format of DRAM was controlled by
21 the uses needed by the computer industry.

22 69. As one Samsung document notes, "in the traditional DRAM market, desktop,
23 workstations, servers and notebooks were the overwhelming market volume driver.
24 Everyone else just follows." Because these products are "similar usage models," one DRAM
25 device was acceptable. Semico Research Corporation, a well-known semiconductor
26 marketing and consulting research company, estimated that 84% of DRAM modules sold in
27 2001 was of two sizes: the 128MB module and the 256MB module.

28 70. DRAM in both loose chip and module form are identifiable, discrete physical

objects that do not change form or become an indistinguishable part of the computer into which it is added. DRAM can be tracked and identified at any stage of distribution and use, even years after it was made. For example, the name of the manufacturer and other identifying information is usually printed on each chip, and on the module itself. The gray rectangles in this example are chips; the strip of chips is the module.



71. Once a module leaves the place of manufacture, it remains essentially unchanged as it moves through the distribution system, whether installed into a computer before a buyer purchases it or whether as an add-on module purchased by the end-buyer, and then installed into a computer.

72. A working computer can be opened to show its DRAM modules, and except for wear and tear, they are identical to what left the factory. A DRAM module can be removed from one computer and placed into another computer. An additional DRAM module can be added to a computer at any time. At any time, the original DRAM manufacturer can be identified by looking at the package, and usually additional information such as country of origin and date of production can also be determined.

73. Thus, DRAM follows a traceable physical chain from the Defendants to the OEMs, to the purchasers of computers and of DRAM modules for upgrades. Free software program also can be used to reveal the manufacturer and the point of origin of the modules inside a computer.

74. The only difference in a DRAM purchase is when it was inserted into a

1 computer—by an OEM as “Base DRAM” in the base configuration of a Computer model, or
 2 later, at the direction of the buyer as “Added DRAM” (either at the point of sale (POS) of a
 3 Computer when the DRAM module is inserted into the Computer by the computer
 4 manufacturer or the retailer (“POS DRAM”), or subsequent to the purchase of a Computer
 5 (“Aftermarket DRAM”)). POS DRAM and Aftermarket DRAM are collectively referred to as
 6 “Added DRAM.”

7 **Who buys DRAM directly from the Defendants?**

8 75. The DRAM market for Computers is comprised of four simple segments:
 9 those that make DRAM (the Defendants); those that purchase DRAM from Defendants for
 10 resale, either as part of a Computer or as an Aftermarket DRAM Module (the direct
 11 purchasers); intermediate resellers, who purchase DRAM modules or Computers for resale
 12 (indirect purchaser resellers); and those that purchase Computers or Aftermarket DRAM
 13 modules for their own use (the indirect purchasers).

14 76. Approximately 90 percent of DRAM sold during the Class Period in the
 15 United States was used for computers. The market for DRAM (including both DRAM chips
 16 and DRAM modules) and the market for Computers are intimately connected, and can be
 17 considered different stages of a single market supply chain.

18 77. Direct purchasers of DRAM used in computers buy it for two reasons: to
 19 resell it as DRAM modules or to install it into a computer.

20 78. By far Defendants’ largest direct customers are the manufacturers of desktop
 21 and laptop computers, servers and workstations, such as Apple, Compaq, Dell, Hewlett-
 22 Packard, Gateway, IBM and Sun. These customers and other, smaller computer makers are
 23 called “OEMs” (Original Equipment Manufacturers) or computer makers.

24 79. The price of DRAM dictated the quantity of DRAM installed as base memory
 25 in computers as well as from whom the OEMs purchased the DRAM. The margins for
 26 OEMs are sufficiently thin that DRAM price increases forced OEMs to either reduce the
 27 amount of installed base DRAM or increase the price of their computers. Meanwhile,
 28 Defendants closely tracked the DRAM needs of OEMs for purposes of determining their own

1 production allotments and forecasts.

2 80. The next largest group of direct purchasers is independent assemblers of
3 DRAM modules, such as Kingston and PNY, called “Module Makers.” Module Makers
4 purchase chips from Defendants, and assemble those chips into modules.

5 81. Module Makers buy chips for two uses: (1) to assemble them into modules
6 for the OEMs (either for use as base DRAM, POS DRAM, or with an Apple, HP or Dell
7 label for Aftermarket DRAM) or (2) to assemble them into modules for resale under different
8 brand names. These Aftermarket modules are sold directly by Kingston or PNY on their
9 websites, or distributed to retailers for sale.

10 82. The third largest group of direct purchasers of DRAM is retailers that sell
11 Aftermarket modules made by Defendants specifically for the computer aftermarket, such as
12 Defendant Micron’s Crucial division, which sells its modules to retailers like Best Buy and
13 CompUSA.

14 **How do direct purchasers buy DRAM?**

15 83. Although Micron sold a limited amount of DRAM to direct purchasers
16 through its retail arm (Crucial), the vast majority of Defendant-produced DRAM was sold to
17 direct purchasers either through contracts that were negotiated bi-weekly or once monthly or
18 by way of the spot market. Because Defendants price-fixed both of these markets, all direct
19 purchasers were affected by the price-fixing conspiracy.

20 84. OEMs purchased DRAM on a contractual basis to insure availability of parts
21 and to guard against unexpected price increases.

22 85. During the Class Period, the contract market comprised approximately 80% of
23 the DRAM sold for use in Computers.

24 86. Because OEMs required vast quantities of DRAM to be readily available, the
25 DRAM Defendants established hubs for purposes of storing DRAM in close proximity to the
26 facilities where the DRAM was installed by OEMs into its end product. The price of the
27 DRAM in these hubs was agreed to by way of the contract negotiations between the OEMs
28 and the DRAM Defendants; however, the OEMs were not charged for the DRAM until they

1 actually pulled inventory out of the hub. By manipulating the inventory in these hubs,
2 Defendants could effectively create artificial shortages for the OEMs.

3 87. Smaller direct purchasers purchased their DRAM from Defendants on the
4 “spot market.” The spot market is a purchasing channel primarily utilized by independent
5 distributors, brokers and speculators who actively buy and sell DRAM for immediate
6 delivery. OEMs also purchase DRAM from the spot market when prices and supply/demand
7 issues so dictate. Although the major manufacturers of DRAM sell primarily to the contract
8 market, the spot market absorbs production overages and otherwise unsold DRAM. The
9 DRAM manufacturers carefully track spot market pricing not only because of because of the
10 revenue derived from spot market sales, but, more importantly, because spot market pricing
11 serves as an important benchmark for contract negotiations with the OEMs.

12 88. During the Class Period, all DRAM pricing was determined from a
13 “benchmark” price commonly referred to as the “spot price.” This spot price was compiled
14 and published daily by data services such as dramexchange.com or Converge. Each day,
15 Defendants received these lists and used them as the benchmark for pricing to all purchasers.

16 89. As one Infineon document declares: “ALL PRICING IS DEPENDENT ON
17 SPOT PRICE.” (Emphasis in original.) Another Infineon document notes that spot pricing
18 is a leading indicator for contract pricing and that the “contract price tracks spot price with
19 lag phase depending on negotiation period.”

20 90. The contract and spot markets were closely correlated:

21 ///

22 ///

23 ///

24 ///

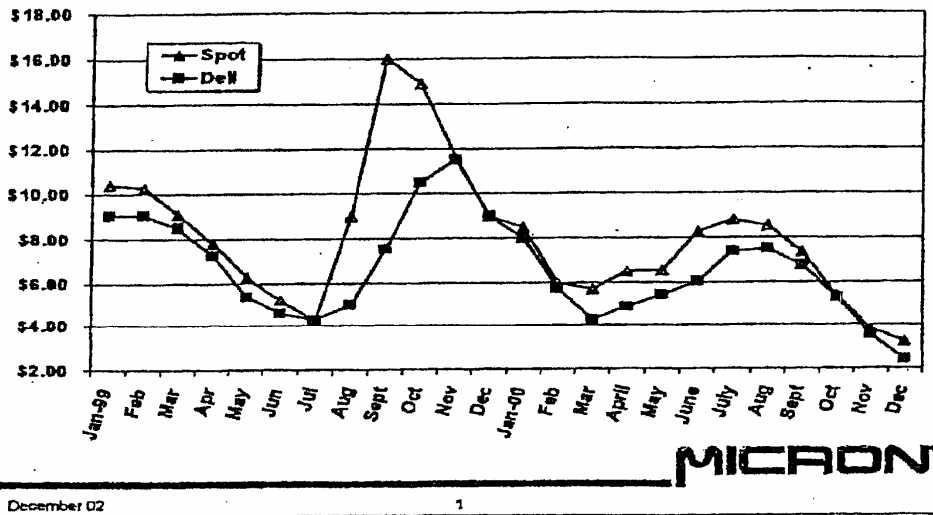
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Dell vs. Spot Pricing



91. Sufficiently correlated are the spot and contract markets that, by manipulating sales made to the spot market, the Defendants could bolster contract market pricing. Mosel Vitelic's Kevin Chen remarked on this in a November 1999 internal email, "[W]e have visited...other vendors in this period...their strategies are to keep spot price high so that they can get a better contract price...I think the way to solve price gap is to sell key account more parts and reduce spot percentage as soon as possible."

92. For example, a Hynix document discusses how Defendants used the spot market price to drive up the contract pricing for IBM in April 2001:

...please have a last minute coordination with SS [Samsung]. . . IBM told me that everyone will stay flat on April 1 with a potential price increase coming on April 15th if the current price levels in the spot market hold up.

They told me they would have no problem with us raising prices on April 15th if the spot market price stays up as everyone else will raise prices them. . .

No one wants to be the first and everyone will wait 2 weeks to see if the higher spot prices are real.

93. When spot prices went up, Defendants jointly immediately sought to raise prices to contract customers. A November 2001 email by Kathy Radford of Micron explains how the Defendants were going to hide their inventories and then use higher spot prices to

1 increase prices for the contract market:

2 We will begin price discussions with the OEMs today. Infineon has
3 already laid the ground work by trying to lift pricing a few weeks ago. We
4 believe that they have been successful with only a couple of OEMs to
5 date. Samsung also had discussions with the OEMs early last week and is
6 preparing them for increases the first part of December. The consensus
7 from all suppliers is that if Micron makes the move, all of them will do the
8 same and make it stick. . . .

9 The OEMs will most likely resist this. Use the spot market pricing as part
10 of the discussion in how suppliers need to narrow the gap between Spot
11 and OEM pricing. You can also use the difference in pricing for DDR vs.
12 SDR in the spot to help in your discussions. . .

13 Due to the price increase that will take place next week it is very important
14 that you review hub inventory levels today. If there is more than 3-4 days
15 worth of inventory, pull the product and bring it back. Customers will try
16 to pull everything once they know that prices will be going up. Don't let
17 this happen.

18 94. This concept of "narrowing the gap" between spot and contract pricing was
19 particularly important to the Defendants. In an August 2000 email, Mosel Vitelic's Thomas
20 Chang provided the following update to a group of Mosel's executives, including Chairman
21 Hu:

22 We remain confused by the gap between contract and brand spot pricing.
23 We therefore spoke with Micron and their comments still support the view
24 that contract prices should firm as we move into the strong season. They
25 commented on a strong demand up-tick from major PC makers over the
26 past two weeks after a pretty steady July. PC makers also look to be able
27 to accept prices as high as US\$9.5. (emphasis added)

28 **What is the chain of distribution?**

95. The indirect purchaser buys DRAM through one of two distribution chains:
Either from the direct purchaser (whether OEM, module maker or retailer), or through an
intermediary (like a wholesale club or a retailer).

96. Personal computers, office servers and workstations all followed the same
path of distribution. Personal computers—either desktops or laptops/notebooks—make up
the largest segment of the computer market. A significant percentage (in the first half of
2001, nearly half of all computer shipped in the U.S.) were shipped directly from the direct
purchaser of DRAM to the end buyers—mainly from Dell and Gateway, but also from
Compaq and Apple.

1 97. A majority of the rest were sold by stores like Best Buy and CompUSA, or on
2 distributor websites like CDW and Ingram Micro.

3 **The downstream DRAM market is highly competitive.**

4 98. The OEM, Module Maker and computer retail markets described above for
5 DRAM modules and DRAM chips are all subject to vigorous price competition. The
6 demand for DRAM was ultimately determined by computer end-buyers, because computers
7 cannot be used without DRAM. The DRAM and computer markets are therefore inextricably
8 linked, and cannot be considered separately. Participants in the DRAM industry were well
9 aware of this intimate relationship, and used computer industry forecasts to predict sales of
10 their own products.

11 99. The OEM, Module Maker and computer retail industries are all subject to
12 vigorous price competition. The direct purchaser OEMs, Module Makers and retailers have
13 very thin net margins. They are therefore at the mercy of their component costs, such that
14 increases in component costs, such as the price of DRAM, lead to quick, corresponding price
15 increases at the OEM and retail levels for Computers or DRAM modules.

16 100. DRAM is one of the five most expensive components in a computer. Because
17 of the thin margins for OEMs and Module Makers, they could not absorb any part of the cost
18 of DRAM.

19 101. The Computer industry and the Module Maker industry share a number of
20 characteristics that make them highly competitive. These include low concentration ratios,
21 easy entry by new participants, little technological or other product differentiation, low fixed
22 costs, and high volumes. An “oligopoly” at different levels of a distribution or
23 manufacturing chain is not required for price increases to be passed through to indirect
24 purchasers.

25 102. Importantly, during the Class Period, a number of large OEMs sold their
26 computers and modules directly to end-buyers. The OEM with the largest share of the
27 United States market, Dell, sold exclusively to end-buyers, as did Gateway. During the Class
28 Period, Compaq and Apple also sold large portions of its computers directly to the end-buyer.

1 103. Approximately 50% of the DRAM sold in or for computers was purchased
2 directly from the direct purchaser of Defendants' price-fixed DRAM.

3 104. Computers are commodities. As stated Louis Gerstner, Chairman of the
4 Board of IBM, "The computer is a commodity."

5 105. There is little or no brand loyalty in the consumer computer market.
6 Aggressive pricing will cause customers to switch their preference to a different brand.

7 106. Computer prices are closely based on production costs. In turn, production
8 costs are dominated by component costs, since assembly costs are minimal. OEMs
9 accordingly used component costs, like DRAM, as the starting point for all price
10 calculations. Thus, computer prices closely track to increases (and decreases) in component
11 costs.

12 107. These factors led to intense competition, in which computer OEMs had little
13 control over their prices. As stated in a Robertson Stephens Technology research
14 memorandum in July 2001, the computer market is a "highly competitive environment with
15 slim margins, commodity-like products and exposure to fluctuations in material costs."

16 108. For example, Dell testified that it pulled DRAM out of a Defendants'
17 inventory hub, which was located next to Dell's assembly plant. That DRAM module was
18 immediately sent to assembly floor, to build the computer that had just been ordered by a
19 customer. Dell did not pay for the DRAM module until it was pulled from the inventory.
20 Thus, Dell knew exactly the price of the DRAM module that it was going to purchase to
21 build a computer immediately for a customer that had just directly ordered the computer.

22 109. Computer models sold by other OEMs to retailers were generally updated
23 several times a year, and the price was changed for each new model. For example, for one
24 large retailer, more than 90 percent of the computers sold during 2000 were either new
25 models or at a different price than the previous month. OEMs, retailers and distributors often
26 use a "standard markup" method to set prices, meaning that they add a standard percentage to
27 their own costs to determine selling prices.

28 110. Defendants were very aware of the impact of their prices on computer end

1 buyer costs. Defendants' expert, Carl Shapiro has agreed that there is price elasticity in the
2 DRAM market—if DRAM is cheap, computer makers will put more memory in their base
3 computer models; if DRAM is expensive, they will install less memory in order to keep the
4 computer at the same price point.

5 **How do the indirect purchasers buy DRAM?**

6 111. Indirect purchasers of DRAM are divided into two categories: those Class
7 Members that purchased “Base” DRAM (DRAM that was included in the base configuration
8 of the computer), and those Class Members that purchased “Added” DRAM (DRAM that
9 was purchased as additional DRAM from the base configuration, either at the point of sale
10 and installed by the computer manufacturer or retailer (POS DRAM), or after the Computer
11 purchase as an Aftermarket DRAM Module.) Many indirect purchasers have DRAM
12 transactions that fall into both groups.

13 112. Whether the Class Member purchased a computer with DRAM module in it,
14 or later bought a DRAM module and installed it herself, the DRAM modules are the same.

15 113. Many entry-level computers sold during the Class Period were configured by
16 the OEMs to have very low base levels of DRAM pre-installed.

17 114. Computer memory upgrades are a unique characteristic of DRAM compared
18 to almost any other computer component. Beyond the basic DRAM with which a computer
19 is originally configured, many buyers add additional DRAM modules to improve the
20 computer's performance. This “add-on” module can be purchased at the time of sale of the
21 computer or it can be done post-sale.

22 115. DRAM chips are packaged into modules for computing uses to allow for easy
23 upgrading. As new operating systems (like Windows 2000 or Windows XP) continued to
24 require greater and greater amounts of memory to perform optimally, the add-on DRAM
25 module became a major a large portion of the Defendants' end-use market. Approximately
26 30% of indirect purchasers' DRAM purchases were as add-on DRAM modules.

27 116. Modules made it possible for non-technical end-buyers of computers to
28 upgrade the memory in their computers, with no tools necessary. Upgrading memory in a

1 computer is as simple as opening the computer cover, pushing down the module retaining
2 clips, seating the module into the slot (or sometimes called “socket”) and then snapping the
3 retaining clips back into place. When the computer is turned back on, the operating system
4 will recognize that addition memory has been installed.

5 117. In early 2000, industry analyst (and paid defense expert) Victor De Dios
6 summarized the module market this way:

7 Computer companies have become more competitive in their memory-
8 option prices against the aftermarket. Computer companies typically sell
9 memories to end users in two ways: through point-of-sale (POS) upgrades
10 and the online store. POS upgrades are memory upgrades bought with a
11 new system while on-line store purchases are upgrades to computers
12 already owned by the end user. Personal computers are built with multiple
13 slots into which DRAM modules can be inserted. Because of the retail
14 point-of-sale or even after-sale ability to add DRAM from any source, the
15 amount and brand of DRAM installed in computers is especially sensitive
16 to price competition.

17 118. Particularly in the “direct to consumer” sales by Dell, Gateway, Compaq and
18 others, computer makers offered instant “add-on” DRAM to the Base DRAM that was part of
19 the base configuration of the Computer. Therefore, changes in the price of DRAM can very
20 rapidly affect the DRAM put in both as Base DRAM, and then added as Added DRAM.

21 119. The DRAM modules that are in computers are exactly the same modules
22 purchased by direct purchasers—i.e., they do not change form in any way. This is
23 demonstrated by Micron’s Crucial division website, which explains that Micron set up
24 Crucial in 1996 so that “end users had the opportunity to buy directly from the manufacturer
25 the same memory modules bought by the world’s major OEMs for original installation into
26 their systems.” Micron set up Crucial simply as a way to reach more DRAM purchasers:

27 Well, what about the end user? What about the everyday folks who want
28 to upgrade their existing systems with OEM-quality memory—the home
desktop user, the IT network guy, the student notebook user? Why don’t
we offer memory to the public, at factory-direct pricing?

120. Crucial’s website confirms that DRAM modules purchased by indirect
purchaser end buyers are the exact same DRAM modules purchased by direct purchaser
OEMs. The website describes Crucial as the “only consumer memory upgrade supplier
that’s part of a major DRAM manufacturer,” enabling it to “sell high-quality memory that

1 has been qualified and approved by all major original equipment manufacturers.”

2 121. When a computer was purchased, the seller usually offered a range of DRAM
3 for the computer. Computer buyers directly chose how much DRAM to purchase, in a
4 process called “configuration.”

5 122. For example, on Dell’s website, a buyer could click the choice called
6 “recommended system” of the computer which gave a price for a pre-determined
7 configurations, or the buyer could choose to “customize it” by choosing additional DRAM.
8 For each option chosen, the price for the computer increased by the line-item charge
9 specified for that chosen upgrade.

10 123. Essentially the same process took place for computers purchased at a retail
11 store. In retail stores, the retailer would have pre-selected a number of models of computers
12 to display in the store; the sales person would suggest upgrading the memory, with the store
13 carrying a number of modules of different brands and sizes. Either the retailer installed the
14 add-on DRAM module, or the buyer took it home and installed it herself.

15 124. As an additional example, one online retailer of computers and modules sold
16 over 3.4 million add-on DRAM modules, for total revenue of over \$435 million during the
17 Class Period. In comparison, during the same period, that retailer sold approximately 2.2
18 million personal computers.

19 125. An indirect purchaser who bought a computer containing add-on DRAM will
20 typically was given an invoice or order acknowledgment showing the specific DRAM option
21 that was selected, thus further indicating the traceability of Defendants’ DRAM in the price
22 paid for the computer.

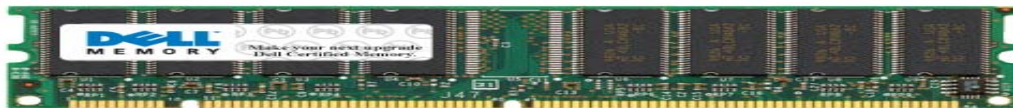
23 126. Nearly all computers can be upgraded with additional DRAM. For example,
24 in the Fall of 2001, one of Hewlett-Packards’ biggest sellers was its Pavilion model 7955.
25 The Pavilion 7955 came with one 256MB memory module pre-installed. The Pavilion 7955
26 was built, however, with three slots for memory, so that the system could be upgraded with
27 more memory after the purchase. HP said the following on its website about memory
28 upgrades:

1 A memory upgrade is often the easiest and least expensive way to extend
2 the life of your computer and improve its performance. For a fraction of
3 the price of a new system, a memory upgrade eliminates annoying
4 performance lags, speeds up your applications, and lets you run more
5 software programs. Here are a few tips for upgrading your computer's
6 memory.

Buy a system that can be upgraded later on.

7 You may be tempted to buy the latest, greatest (and most expensive)
8 system. But you can often save a considerable amount of money by
9 choosing a mid-range system and upgrading it a couple of months or years
10 down the road, when the price for those high-end components comes
11 down.

12 127. Defendants sell DRAM modules packaged under various brand names to
13 OEMs to sell via the OEM's websites. For example, if a customer purchased a Dell
14 computer, and later decided to add more memory, he could go to the Dell website and order
15 additional DRAM modules. That module would be branded as a Dell DRAM module, even
16 though Dell did nothing to the DRAM module other than put its brand sticker on the module:



17
18
19
20 128. Retailers sell the same types of DRAM modules that are pre-installed in
21 computers or sold as add-on modules by the OEMs. For example, Best Buy sells modules
22 assembled and branded by Crucial (a Defendant here), PNY and Kingston. At its stores,
23 Apple sold modules branded as Apple modules that were in fact packaged for them by a
24 Defendant.

25 129. A variety of DRAM module resellers, such as Crucial, CDW and Amazon,
26 sold DRAM modules at prices that changed weekly or daily. These price changes were
27 reflected in price changes by the OEMs. For example, Dell catalogs through approximately
28

1 December 2001 say “call your sales consultant” to get the price of additional DRAM.

2 Gateway tracked its DRAM prices to customers in a separate database from other upgrades to
3 allow for more frequent updates.

4 130. For example, the computer industry press reported in 1999 that when prices
5 for DRAM chips increased, “At Crucial Technology, the memory chip selling arm of Micron,
6 prices for 64-megabit chips have leaped from \$8 last week to between \$12 and \$14,
7 according to a corporate sales representative.”

8 131. An internal Micron document reported in January 2002 that “direct memory
9 vendor Crucial sold 128MB of computer 133 DIMM memory to end users for \$15.23 last
10 October. Last week, Crucial offered the same product for \$31.88—more than twice the price.
11 Crucial’s 256MB SDRAM sold for \$29.37 a year ago; now it is priced at \$56.80—almost
12 twice as much.”

13 **Plaintiffs’ Injuries**

14 132. Plaintiffs and indirect purchasers participate in the market for the sale of
15 DRAM. To the extent plaintiffs and indirect purchasers bought DRAM as part of a computer
16 purchase, Defendants’ unlawful conspiracy inflated the prices at which OEMs resold DRAM
17 as a component of computer sales. Defendants have extinguished the market forces of
18 competition to their mutual benefit. Consumers, including plaintiffs, are injured by paying
19 supracompetitive prices for DRAM.

20 133. Because Defendants control the market for DRAM, there are virtually no
21 choices for persons and businesses who require a computer other than buying one
22 manufactured by a direct purchaser that paid supracompetitive prices to Defendants because
23 of Defendants’ unlawful agreement alleged herein.

24 134. The economic and legal literature has recognized that unlawful overcharges in
25 a component normally resulted in higher prices for products which contain that price-fixed
26 component. As Professor Herbert Hovenkamp, a noted antitrust scholar has stated in his
27 treatise, FEDERAL ANTITRUST POLICY, THE LAW OF COMPETITION AND ITS
28 PRACTICE (1994) at 564:

1 A monopoly overcharge at the top of a distribution chain generally results
 2 in higher prices at every level below. For example, if production of
 3 aluminum is monopolized or cartelized, fabricators of aluminum cookware
 4 will pay higher prices for aluminum. In most cases they will absorb part
 5 of these increased costs themselves and pass part along to cookware
 wholesalers. The wholesalers will charge higher prices to the retail stores,
 and the stores will do it once again to retail consumers. Every person at
 every stage in the chain likely will be poorer as a result of the monopoly
 price at the top.

6 Theoretically, one can calculate the percentage of any overcharge that a
 7 firm at one distributional level will pass on to those at the next level.

8 135. Similarly, two other antitrust scholars—Professors Robert G. Harris
 9 (Professor Emeritus and former Chair of the Business and Public Policy Group at the Haas
 10 School of Business at the University of California at Berkeley) and Lawrence A. Sullivan
 11 (Professor of Law Emeritus at Southwestern Law School and author of the Handbook of the
 12 Law of Antitrust)—have observed that “in a multiple-level chain of distribution, passing on
 monopoly overcharges is not the exception: it is the rule.”

13 136. As Professor Jeffrey K. McKie-Mason (Arthur W. Burks Professor of
 14 Information and Computer Science and Professor of Economics and Public Policy at the
 15 University of Michigan), an expert who presented evidence in a number of the indirect
 16 purchaser cases involving Microsoft Corporation, said (in a passage quoted in the judicial
 17 decision in that case granting class certification):

18 “As is well known in economic theory and practice, at least some of the
 19 overcharge will be passed on by distributors to end consumers. When the
 20 distribution markets are highly competitive, as they are here, all or nearly
 21 all of the overcharge will be passed through to ultimate consumers. ...
 22 Both of Microsoft’s experts also agree upon the economic phenomenon of
 cost pass through, and how it works in competitive markets. This general
 phenomenon of cost pass through is well established in antitrust laws and
 economics as well.”

23 137. Plaintiffs and other indirect purchasers have been forced to pay
 24 supracompetitive prices for DRAM modules purchased as Aftermarket DRAM modules and
 25 for Computers that contain DRAM modules. These inflated prices have been passed on to
 26 them by direct purchaser manufacturers, distributors, and retailers. Those overcharges have
 27 unjustly enriched Defendants.

28 138. Just as DRAM can be physically traced through the supply chain, so can its

1 price be traced to show that changes in the prices paid by direct purchasers affected prices
2 paid by indirect purchasers of DRAM.

3 139. The market for DRAM and the market for Computers are inextricably linked
4 and intertwined simply because the DRAM market exists to serve the computer market.
5 DRAM and Computers markets are, for all intents and purposes, inseparable in that one
6 cannot exist without the other.

7 140. Quantitative correlation estimates strongly suggest that the market for
8 computers is inextricably linked to the market for DRAM by virtue of the strong correlation
9 between the spot price of DRAM and the price of “base” DRAM contained in every
10 computer.

11 141. The conspiratorial conduct of the Defendants, the purpose of which is to raise
12 the price of DRAM, would directly increase the price of computers. It is rare to find a
13 product whose price is dependent on only one factor or variable. Economists have developed
14 techniques to isolate and understand the relationship between one “explanatory” variable and
15 a “dependent” variable in those cases when the dependent variable is explained by a
16 multitude of variables---when all such variables may be changing simultaneously. That
17 analysis—called regression analysis--is commonly used in the real world and in litigation to
18 determine the impact of a price increase on one cost in a product (or service) that is an
19 assemblage of costs. Thus, it is possible to precisely isolate and identify only the impact of
20 increase in the price of DRAM on Computer prices even though computers contain a number
21 of other components whose prices may be changing over time. Regression analysis is
22 particularly well suited here because the goal is to isolate the impact of one component,
23 namely the cost of DRAM to the direct purchaser on the price ultimately paid by the end-user
24 for a computer. A regression model can explain the variation in the price of Computers as a
25 function of changes in the price of DRAM. In such models, rather being treated as the
26 dependent variable, the price of DRAM is treated as an independent or explanatory variable.
27 The model could isolate how changes in the price of DRAM impact the price of Computers
28 while holding constant the impact of other price determining factors.

1 142. Economic and legal literature recognizes that the more pricing decisions are
 2 based on cost, the easier it is to determine the pass-through rate. The directness of affected
 3 costs refers to whether an overcharge affects a direct (i.e., variable) cost or an indirect (i.e.,
 4 overhead) cost. Overcharges will be passed-through sooner and at a higher rate if the
 5 overcharge affects direct costs. Here, DRAM is a direct (and substantial) cost of any
 6 computer.

7 143. Other factors that lead to the pass-through of overcharges include (i) whether
 8 price changes are frequent; (ii) the duration of the anti-competitive overcharge; (iii) whether
 9 pricing decisions are based on cost; (iv) whether the overcharge affects variable, as opposed
 10 to overhead, costs; (v) whether the resellers' production technology is uniform; (vi) whether
 11 the reseller supply curve exhibits a high degree of elasticity; and (vii) whether the demand of
 12 the resellers is inelastic. All of these factors were present in the computer market during the
 13 Class Period. Applying standard microeconomic analysis, prices of computers changed each
 14 month in response to DRAM prices, with DRAM prices having a direct and immediate
 15 impact on computer prices. The precise amount of such an impact on average computer
 16 prices can be measured and quantified. Commonly used and well-accepted economic models
 17 can be used to measure both the extent and the amount of the supracompetitive charge passed
 18 through the chain of distribution.

19 **VII. DEFENDANTS' ILLEGAL CONDUCT**

20 144. Defendants and their co-conspirators have engaged in a contract, combination,
 21 trust or conspiracy, the effect of which was to raise the prices at which they sold DRAM to
 22 artificially inflated levels.

23 145. Defendants, through their officers, directors and employees, effectuated the
 24 aforesaid conspiracy between themselves and their co-conspirators by, among other things:

- 25 a. participating in meetings and conversations, including through various
- 26 trade associations and committees, to discuss the prices of DRAM in
- 27 the United States;
- 28 b. agreeing, during those meetings and conversations, to charge prices at

1 specified levels and otherwise to increase and maintain prices of
 2 DRAM sold in the United States;

3 c. issuing price announcements and quotations in accordance with the
 4 agreements reached; and

5 d. selling DRAM to various customers in the United States at non-
 6 competitive prices.

7 146. Defendants' contract, combination, trust or conspiracy was centered in,
 8 carried out, effectuated and perfected mainly in the State of California. Therefore, all
 9 members of the Class, whether or not California residents, are entitled to recover under
 10 California law.

11 147. The conspiracy began at least as early as April 1999. For each Defendant, the
 12 conspiracy was rampant throughout all levels of the company. The systematic nature of the
 13 conspiracy is evidenced by the organization of "contact persons" through which to funnel
 14 price fixing information, executive presentations praising employees for obtaining
 15 competitors' pricing plans and information, and even setting compensation based on an
 16 employee's ability to obtain and coordinate prices with competitors.

17 **How the Conspiracy Worked**

18 148. As stated above, by far the largest direct purchasers of DRAM are the
 19 computer OEMs. Each of these OEMs purchased DRAM from the "approved vendors"—
 20 those Defendants that had qualified their DRAM for use in the OEMs' computers. The key
 21 terms of DRAM sales to OEMs and other direct purchasers arose from negotiations between
 22 the DRAM manufacturers and the OEMs. Negotiations were structured around bi-weekly or
 23 one month intervals. OEMs often solicited initial or "first pass" pricing proposals from their
 24 DRAM suppliers. These price quotes were the starting point for further negotiations. The
 25 "first pass" pricing proposals by DRAM defendants to OEMs were obtained nearly
 26 simultaneously from the DRAM Defendants bidding on that supply opportunity. Further
 27 negotiations took place shortly thereafter—either the same day or within a few days.

28 149. Defendants used this structure to their advantage and actively sought contact

1 with other Defendants in the midst of these negotiations, as evidenced by an email by
2 Nanya's David Dwyer: "I called Samsung's Russ Griffo earlier in the day and he said they
3 were 'around' \$40 but they hadn't closed at the time."

4 150. Because the OEMs could purchase their DRAM needs from any of the
5 qualified DRAM Defendants, a particular OEM could purchase its DRAM from the
6 Defendant offering the best price.

7 151. To achieve their price-fixing goal, the DRAM manufacturers needed to
8 engage in a systematic and continuous exchange among them of confidential pricing
9 information relating to the bids that each submitted to the OEMs at two to four week
10 intervals.

11 152. One example of this systematic exchange was when Nanya's Mike Walsh
12 provided Elpida's Jim Sogas (who subsequently pled guilty for his involvement in the
13 DRAM conspiracy) with a 25-page spreadsheet detailing Nanya's price targets at Compaq
14 for the upcoming month. This spreadsheet contains pricing targets for literally hundreds of
15 chipsets.

16 153. The communications occurred at several levels and were both vertical and
17 horizontal in nature. At one level, there was a continuous exchange of pricing information
18 among the account representatives for each Defendant who were primarily involved with the
19 price negotiations with a particular OEM. Symbiotic relationships between the erstwhile
20 competitors soon developed: "I know the guys at Nanya very well," wrote Samsung's Jim
21 Elliot, "so getting info from them should not be a problem."

22 154. And, in fact, getting information from Nanya was not a problem. In a January
23 2002 email, Samsung's Elliot responded to an email from Samsung's Yeongho Kang (who
24 subsequently pled guilty for his involvement in the DRAM conspiracy), indicating that he
25 "spoke with Nanya today and found out the following: Current 128MB DDR DIMM contract
26 price : 'Just under \$36.00.' WW Channel BSP for DDR has been \$4.00 (128Mb) and \$8.00
27 (256Mb) for the month of January. This BSP was raised last week to \$4.20 and \$8.40
28 respectively in anticipation of Intel releasing large quantities of DDR chipsets and

1 motherboards next week.”

2 155. These account executives collected pricing information from their erstwhile
3 competitors and filtered this information to high-level corporate executives. These high-level
4 executives then traded on this information with their corporate brethren at allegedly
5 competing Defendants. This high-level intelligence was relayed back down to the
6 subordinate account executives.

7 156. For example, in of July 1999, D.W. Kim, Hynix’s Operations Manager in San
8 Jose, California, was assigned by his boss the task of coordinating the price fixing
9 discussions amount Defendants with regard to all “strategic accounts”—which included all
10 the large OEM computer makers: “I would like to appoint you as the communication center
11 to coordinate the pricing to the strategics. Please ask your counterpart at LG to quote after
12 hearing from you. You will be copied with our pricing proposal to Compaq, Dell, Gateway,
13 HP.”

14 157. Samsung encouraged its sales representatives, in a Power Point slide
15 presentation in November 1999 titled “Request to Field” to “collect customer & competitive
16 information and share them on a timely basis (As You Give, So Shall You Receive).”

17 158. Rajit Shah, Mosel Vitelic’s Vice President of Marketing, offered similar
18 encouragement after receiving a report of a subordinate’s visit with Samsung, stating he was
19 “very glad to read about your Samsung visit report...Keep up this connection. Also, try to
20 expand such relationship with other suppliers to get more understanding in terms of what is
21 going on in the market.”

22 159. At Micron, Bill Lauer kept a spreadsheet with competitor’s prices at the major
23 OEMs. As explained in an email to the sales reps for those accounts:

24 The attached spreadsheet is kept in the G drive under BLauer and called
25 “price war.” Each RSM [Regional Sales Managers] with one of the 6
26 Computer Accounts on the spreadsheet will need to update their pricing on
27 a real-time basis as well as update the competitor’s pricing portion. Also,
28 please update the “date” on the chart. The purpose of this tool is for the
RSMs, ASMs [Account Sales Managers], and Mike [Sadler] to have
instant access to real-time competitor pricing info in our top Computer
Accounts. It is CRITICAL for this spreadsheet to be updated on a real-
time basis in order for it to be a useful tool to everyone. Please make sure

1 you remember to update this with your price changes as well as competitor
2 info. Thanks.

3 160. Similarly, Mosel Vitelic implemented a formal price index system for
4 purposes of tracking DRAM prices by vendor. This system too relied upon information
5 provided by competitors, as indicated by a February 2002 email from Mosel's Michael
6 Ramirez: "I had a conference call with Hynix today regarding 4Mx16 DDR - 4 pricing...I
7 believe you will have adjust (sic) the pricing index...to capture business."

8 161. Indeed, in the last month before the DOJ subpoenaed some Defendants, the
9 Defendants found it too bothersome to email and call each other, and so set up a "listserv"
10 where everyone could share information with the whole group: On May 15, 2002, an Infineon
11 employee calling himself "Supplier 2002 uk" at supplier2002uk@hotmail.com sent an email
12 titled "Supplier Group on Yahoo" to two Micron employees, two Infineon employees, three
13 Samsung employees, two Elpida employees, one Nanya employee, and five Hitachi
14 employees. The email sender states that the "point of this group is to get the supplier to share
15 information rather than rely on [what] the customer tell[s] us." The email sender advises the
16 participants to set up Hotmail or Yahoo email addresses to ensure anonymity.

17 162. The price-fixing in the contract market followed a predictable path for each
18 direct purchaser account. First, the account representatives would talk to each other about
19 each Defendant's planned prices. That information would go up the chain of command in
20 each company, and after further conspiratorial contacts at the executive level, instructions on
21 how to bid for the account would be relayed back to the sales representative.

22 163. Mosel Vitelic's Director of Marketing did precisely that in an email to other
23 Mosel Vitelic personnel: "For HP, here are some price guidelines that I got from our
24 competitors on the contract prices- you can negotiate using them..."

25 164. IBM was often the first OEM to negotiate its pricing for the month or half-
26 month. IBM required an initial bid each month, several days to a week before the end of the
27 month. Then there were specific price negotiation meetings. A few days before the end of
28 the month, a final bid was to be made to IBM.

1 165. Defendants engaged in a systematic exchange of pricing information before
2 and during their negotiations with IBM. For example, at Hynix, a salesperson with
3 responsibility for IBM, Paul Palonsky, has acknowledged in sworn testimony that he
4 gathered competitor price information “directly from competitors, including Samsung,
5 Micron, Infineon, Hitachi, Toshiba, Elpida, LG and NEC.”

6 166. During this same period, Palonsky (who worked at Hynix) had a counterpart
7 at Micron, Keith Weinstock. Between summer 1998 and spring 2002, Weinstock and
8 Palonsky spoke regularly. Weinstock told Palonsky the price ranges that he intended to
9 recommend to his supervisors. He and Palonsky also discussed pricing information with
10 respect to other competitors, including Samsung, Infineon, and Toshiba. Palonsky told
11 Weinstock that he got such information directly from employees at the competitors.

12 167. For example, Palonsky worked for C.K. Chung, Hynix’s Director of
13 Worldwide Strategic Account Sales. Chung collected pricing information from his
14 subordinates and passed that information along. He also directly contacted competitors about
15 pricing. He relayed that information to his boss, D.S. Kim, Hynix’s Senior Vice President
16 and General Manager of Worldwide Sales and Marketing.

17 168. A March 2001 email exchange between Palonsky and Chung is illustrative of
18 how price exchange and coordination drove DRAM prices up. At the same time of this
19 exchange, IBM was resisting Hynix’s pressure to raise DRAM module prices from \$36 to
20 \$38. Palonsky reported to Chung:

21 I talked to IBM about the potential that we might want to raise prices now
22 to the \$38 level. This was received very poorly. IBM told me we would
23 be alone and they would be forced to cut our share. IBM does not expect
their biggest and favorite supplier to lead the price up.

24 169. On the same day, Chung emailed back to Palonsky information he received
25 from Samsung, the largest DRAM manufacturer:

26 Before you submit our final price as you suggested for the first part of
27 April, please have a last minute coordination with SS [Samsung]. They
28 are saying they will go to \$38. . . . If you can have SS lead the charge, you
will follow Samsung’s leadership.

1 170. Likewise, Weinstock at Micron obtained competitors' pricing information and
2 gave Micron's pricing information to competitors at the specific directions of his superiors.
3 Mike Sadler encouraged Weinstock as early as 1998 to develop contacts at competitors,
4 particularly Samsung. Weinstock was present when Mike Sadler spoke on the phone to Gary
5 Swanson of Hynix about DRAM pricing. Sadler called Swanson to confirm a price range for
6 a DRAM product on the IBM account.

7 171. Another example of the price fixing activities involved the OEM Hewlett-
8 Packard. Defendants were in constant communication with each other on a weekly basis to
9 coordinate their price fixing activities with regard to HP.

10 172. Mike Grant of Micron was responsible for sales to HP-Compaq. Mr. Grant
11 has admitted to illegal contacts with his counterparts at Infineon; Hitachi and Elpida.

12 173. Early in 1999, another Micron account representative for the HP account
13 email his boss, telling him that he had contacted his counterpart at Samsung regarding future
14 pricing for HP: "Spoke to Samsung guy last night and they said they are looking to hold their
15 pricing at current levels for March (around \$80 and \$159)."

16 174. On March 9, 1999, that same salesperson wrote to his boss, and to Mike
17 Sadler of Micron to relay a communication with Samsung where Samsung provided pricing
18 information regarding HP: "I spoke with Samsung and they are at \$77 (approx)."

19 175. On July 28, 1999, Eileen Sheridan of Elpida wrote an email where she said
20 that she had confirmed with Samsung and Infineon their prices to HP; she suggested that
21 Elpida bid the same price.

22 176. Shortly thereafter, on August 10, 1999, Plaintiff Uglem purchased a HP
23 computer from Best Buy.

24 177. Defendants were also coordinating their pricing at Apple. After obtaining
25 proposed prices from Samsung, Hynix and Micron bid the same or similar prices to Apple.
26 Later, when Infineon also began to sell DRAM to Apple, it joined in the conspiracy at Apple.

27 178. The eight months before Plaintiff Delaney purchased her Apple computer on
28 March 19, 2002, are illustrative of the price fix concerning DRAM prices to Apple.

1 179. On August 3, 2001, Hynix heard directly from “Samsung HQ” about the
2 prices they were going to charge to Apple for that month and the price increase for the
3 following month.

4 180. In late August 2001, Hynix again checked with Samsung before setting its
5 price to Apple: “I checked with Samsung HQ” . . . “Samsung & Micron now at \$3.75
6 range.”

7 181. In September 21, 2001, an Infineon account representative confirmed
8 Samsung and Micron prices before determining what it should offer to Apple: “I will,
9 however, check with Samsung on their price position at Apple.”

10 182. A November 2001 Hynix e-mail makes reference to the artificial product
11 shortage, and Hynix’s awareness of the same: “Micron is reducing Apple hub inventories in
12 order to create an artificial shortage and will follow SS [Samsung] or Hynix, if Apple accepts
13 a price increase.”

14 183. On December 3, 2001, Micron (specifically Kathy Radford) received info
15 from Samsung, Hynix and Infineon about their plans to raise prices at OEMs. She put in her
16 notes that Samsung was raising prices at Apple and that \$13.25 was their minimum price and
17 “anything lower will not get Samsung parts;” on December 4, she forwarded this info to
18 others at Micron.

19 184. On December 3, 2001 Samsung’s Sun Woo Lee obtained from Hynix its
20 pricing for IBM, Compaq, Apple, and Dell.

21 185. On February 1, 2002, John Bugee emailed Rudd Corwin (both of Infineon)
22 info regarding Micron’s Apple pricing that he received from Tom Addie of Micron.

23 186. On March 19, 2002, Plaintiff Delaney purchased an Apple computer. In
24 September 2002, Plaintiff Delaney purchased an additional 512MB of DRAM from an online
25 store called “MacWarehouse,” now a part of online retailer CDW.

26 187. Meanwhile at Dell, the same types of conspiratorial contacts were occurring.
27 Micron, Samsung, Infineon, Hynix, NEC, Toshiba and Nanya communicated about, and
28 coordinated the prices to, Dell.

1 188. As early as September 1998, Hynix was planning to raise prices for Dell and
2 Gateway and to “[p]lease try to persuade other Japanese sales manager [sic] to participate in
3 our movement if possible.”

4 189. Hynix’s Charles Byrd wrote an email on September 25, 1998 where he
5 discussed receiving pricing information from NEC, Samsung, and Toshiba among others for
6 Dell: “For Dell Oct Pricing proposal I have gathered the latest information from the
7 competition as well as my idea for positioning.”

8 190. One month later, Mr. Byrd again discussed pricing information for Dell with
9 competitors: “For Dell Oct Pricing proposal I have gathered the latest information from the
10 competition. . .”

11 191. Charles Byrd wrote on November 10, 1998 that he’d received pricing
12 information regarding Samsung’s pricing at Dell, as well as other competitive pricing
13 information such as for Toshiba and Hitachi, and then suggests pricing based on the
14 competitive information.

15 192. On March 25, 1999, Jim Sanders of Infineon wrote an email to Christian
16 Scherp and Heiko Wieland of Infineon referencing discussion of price coordination among
17 competitors related to Dell pricing, including, Hyundai, Toshiba, Samsung and Micron: “All
18 the competition says \$67 target is unreasonable. Everyone thinks the spot market is around
19 \$8.30-\$8.40...The following represents their comments about pricing.”

20 193. Charles Byrd of Hynix wrote an email on May 15, 1999 that reflected
21 communication with NEC about its pricing to Dell and in turn this influenced Hynix’s
22 pricing model: “Talked to NEC, they are telling Dell the following...”

23 194. On May 30, 1999, Byrd wrote an email reflecting communications with
24 Samsung about Samsung and Hynix’s pricing at Dell.

25 195. The price-fixing continued unabated throughout the Class Period. In 2002,
26 Dell began to suspect that there was “cartel-like” behavior in the industry. On April 30,
27 2002, Dell’s founder and Chief Executive Officer, Michael Dell, spoke at the Merrill Lynch
28 “Hardware Heaven” conference. During Michael Dell’s presentation, he said, “I think we

1 saw cartel-like behavior by a couple of DRAM suppliers.” As a result, Dell announced that it
2 would widen its network of suppliers to try to defeat the anti-competitive conspiracy.

3 196. In order to receive more competitive bids, Dell sought to purchase DRAM
4 from other sources. Nanya was sought out as a “qualified vendor” at Dell in an effort by the
5 computer company to avoid the “DRAM cartel” to which Michael Dell publicly alluded.

6 197. But, unknown to Dell, Nanya was part of the on-going conspiracy. Before
7 Nanya sold its first DRAM module to Dell, it had already had meetings about Dell pricing
8 with Infineon and Samsung, and as memorialized in a January 2, 2002 internal Samsung
9 email regarding DDR pricing to Dell, Mike Bocian wrote “Nanya confirmed they will be
10 qualed next week and will quote \$56.”

11 198. The sensitive competitive information that the DRAM manufacturers
12 continuously exchanged was not always narrowly targeted to boost the prices as specific
13 accounts. Because OEMs and others could also purchase DRAM on the open “spot” market,
14 Defendants also conspired to affect spot prices.

15 199. An important market variable in the OEM negotiations was the relationship of
16 the spot market to the contract market. If the spot price rose above the last contract
17 negotiations from the prior weeks, the DRAM manufacturer would argue that the contract
18 price should rise to reflect market conditions. Likewise, if the spot price dropped, OEMs
19 generally sought a downward price adjustment. Because computers, and the OEMs that
20 produced them, accounted for such a substantial part of the DRAM market, they were the
21 focal point of any potential price competition between DRAM manufacturers.

22 200. Spot prices were used as the pricing benchmark for sales to direct purchasers
23 other than OEMs and others that entered into contractual agreements. Both buyers and
24 sellers in the DRAM industry tracked changes in the DRAM spot prices on a daily basis.
25 Thus, the conspiracy included exchanges of prices regarding the spot market.

26 201. In contrast to the OEM sales described above, DRAM was also sold by
27 Defendants on the spot market on a transactional basis, for immediate or short-term delivery.
28 The spot market was important to DRAM market participants, even if they themselves did

1 not make “spot” purchases, because it provided a snapshot of the current market demand
2 price. As noted above, when the spot market dropped below contract prices, OEMs sought a
3 better deal from Defendants at the next negotiation; if the spot market rose, OEMs were
4 pressed to accept price increases.

5 202. Defendants therefore took steps to control spot market prices. Micron’s
6 executive in charge of spot market sales communicated with both Samsung and Infineon
7 regarding spot market prices.

8 203. Defendants agreed to withhold excess (i.e., non-contractual DRAM) off the
9 spot market to drive up prices. In a Mosel email, A.K. Lui wrote:

10 Dear Sales,

11 Today (May 13), Samsung Asia Sales Director informed me, Samsung,
12 Hynix, Micron, Infineon and Elpida are going to raise the 128Mb SDR to
US \$3.00 range. Could you confirm with your sources before selling?

13 204. It has been reported in the press that an officer of DRAM manufacturer
14 Mosel-Vitec admitted that price fixing meetings occurred, and that an agreement had been
15 reached between the major DRAM producers to push prices up by reducing supply.
16 According to press reports, Hynix and Samsung executives visited both Mosel-Vitec and
17 Nanya Technology executives to discuss these agreements.

18 205. In May 2002, Thomas Chang admitted to the press Mosel’s involvement in
19 the conspiracy to fix DRAM prices for a second time: Mr. Chang confirmed that Mosel “had
20 reached an agreement with Hynix and Samsung to push up DRAM prices to US \$3 a chip by
21 stopping dumping.” Chang continued: “Hynix and Samsung executives visited Mosel-
22 Vitec and Nanya Technology Corp. recently to discuss the agreement.”

23 206. An official at Nanya was also quoted in the press as openly discussing
24 anticompetitive measures:

25 “Everyone is feeling the need of cutting production,” said Charles Kau, an
26 executive vice president with Linko-based Nanya Technology. “As of
27 how to engage in the cut is an issue that needs to be discussed. Nanya is
willing to cooperate in such a cut, he added.

28 207. In May 2002, the Taipei Times reported that a DRAM industry executive

1 admitted that his company agreed with its competitors to fix DRAM prices. According to the
2 article, the competitors agreed to set the floor price for DRAM at \$3.

3 208. On May 7, 2002, Micron's Lionel Lim sent an e-mail titled "spot 5/7" to
4 several Micron employees and copied several others. Mr. Lim states that he heard "Hynix is
5 calling a meeting with Samsung to stabilize the pricing at \$35 for 128MB at core customers
6 and maintaining a price of slightly above \$3 on the spot."

7 209. The confidential business information exchanged by Defendants was not
8 limited to prices at specific accounts, or the prices at which they would offer DRAM in the
9 spot market. For example, in July 2001, Infineon's Christine Lee obtained and forwarded to
10 her superior, Rudd Corwin, Micron's then-current price book, which was confidential Micron
11 material that contained DRAM prices for Micron's DRAM sold by distributors. Christine
12 Lee stating "[d]on't ask, but here's Micron's latest price book."

13 210. Defendants also exchanged production "roadmaps," exchanged information
14 on their confidential production volume plans, exchanged information on the amount of
15 product they had in inventory at the factory or its customer "inventory hubs" and agreed on
16 what to tell the public about production, inventory and invent similar stories about why the
17 price of DRAM was rising.

18 211. To ensure their market manipulation was effective, make sure that their
19 coordination of supply was effective, high-level executives had quarterly meetings to discuss
20 each company's production and pricing plans. For example, on July 4, 2001, Infineon's
21 Ruedeger Vogt, a high-ranking executive, sent an email to a number of Infineon executives
22 titled "Minutes marketing meetings with SEC and Hynix." The email describes a meeting
23 between three Hynix executives and three Infineon executives which took place on June 28,
24 2001. Vogt's summary lists several "Hynix statements" made during the meeting concerning
25 DRAM market conditions, Hynix's current production plans, and Hynix's projected growth
26 in 2002. Significantly, first on the list is the statement: "Industry has to reduce wafer starts in
27 order to come out of the current oversupply situation." The email also describes a meeting
28 on a two-day meeting on July 27-28, 2001 between four Samsung executives and the same

1 three Infineon executives. Under “topics discussed,” it lists Samsung’s production, its
2 roadmap, “Market Outlook,” and Samsung’s sales negotiations with Hewlett Packard and
3 Sony.

4 212. A few months later, Samsung appears to have held what was essentially a
5 summit with a group of Taiwanese DRAM manufacturers, including Nanya. An email
6 authored by Samsung’s Vice President of Global Accounts Sales and Marketing, Mike
7 Bocian, summarized the summit and was titled “KEY TAKEAWAYS FROM OUR
8 MEETINGS WITH TAIWANESE DRAM MANUFACTURERS.” (emphasis original)
9 Included in the email was information relating to Nanya’s technology focus, production
10 information and financial issues.

11 213. On July 3, 2001, Hynix’s C. K. Chung, emailed Hynix’s D. S. Kim, K. C.
12 Suh, and Gary Swanson. Chung titled the email “Micron—Mike Sadler,” and stated: “Gary
13 Swanson told me yesterday that [Micron’s] Mike Sadler wanted to discuss with us on the
14 measures to stabilize the market price. . . . [Hynix’s] Farhad Tabrizi got the same message
15 from Mike this morning. I think your diplomacy is working.”

16 214. On September 20, 2001, Infineon’s Peter Schaefer sent an email to his
17 superiors. Schaefer wrote: “I talked to Mike Sadler.” He describes in detail Micron’s
18 inventory and production levels, their plans for DRAM production, and Micron’s current
19 negotiations with NEC. He also notes: “On the assumption that Hynix gets new money, they
20 would consider taking supply out of the market if others do the same; either by reducing
21 waferstarts or destroying all inventories. Follow up next week.” . . . “YW Lee [of Samsung]
22 was planning on meeting with Appleton next week but cancelled MU [Micron] thought
23 Lee wanted to talk about cut backs.”

24 215. To solidify the production restraints that Defendants had negotiated among
25 themselves throughout the late summer of 2001, in October 2001, Mike Sadler of Micron
26 carried out his world tour to achieve agreement on production cutbacks. In order to convince
27 all Defendants that they needed to reduce production to raise prices, Sadler organized an
28 international trip that took him from Boise to Tokyo, then to Korea, then to Taiwan, then to

1 Munich and back to Boise. During that trip, Mr. Sadler (who has refused to testify) met with
 2 at least Y.W. Lee of Samsung and the CEO of Infineon, Dr. Ulrich Schumacher. Other
 3 evidence suggest that his meetings in Japan and Taiwan were with other Defendants, such as
 4 Nanya and Mosel Vitelic.

5 216. In fact, Steve Appleton, the Chairman, Chief Executive Officer, and President
 6 of Micron testified extensively about his knowledge that Mr. Sadler had been contacting
 7 Hynix, Infineon, Samsung and the Taiwanese competitors to discuss the market generally,
 8 and pricing specifically.

9 217. The sheer number of DRAM executives who participated in the exchange of
 10 price information is extraordinary. More than 100 of Defendants' employees participated in
 11 conspiratorial conduct during the class period.

12 218. In sworn evidence, Samsung has acknowledged that 48 of its executives and
 13 employees may have obtained or received competitive information and has provided a list of
 14 30 additional executives and personnel who may also have been involved.

15 219. Samsung Semiconductor and Samsung Electronics Co. pled guilty to criminal
 16 charges in November 2005 and paid a \$300 million fine. The guilty plea covered the time
 17 period April 1, 1999 to June 15, 2002, wherein Samsung conspired "to fix the prices of
 18 DRAM sold to certain computer and server manufacturers." Affected customers included
 19 Dell, Compaq, Hewlett-Packard, Apple, IBM, and Gateway. Specifically, Samsung was
 20 charged with:

- 21 • "Participating in meetings, conversations, and communications in the
 22 United States and elsewhere to discuss the prices of DRAM to be sold
 to certain customers;
- 23 • Agreeing, during those meetings, conversations, and communications,
 24 to charge prices of DRAM at certain levels to be sold to certain
 customers;
- 25 • Issuing price quotations in accordance with the agreements reached;
 26 and
- 27 • Exchanging information on sales of DRAM to certain customers, for
 28 the purpose of monitoring and enforcing adherence to the agreed-upon
 prices."

1 220. Samsung employees Sun Woo Lee, Yeongho Kang, and Young Woo Lee
 2 entered guilty pleas in April 2006. These guilty pleas covered various periods from as early
 3 as April 1, 1999 until on or about June 15, 2002, wherein these individuals conspired “to fix
 4 the prices of DRAM sold to certain computer and server manufacturers in the United States.”
 5 Specifically, these individuals were charged with:

- 6 • “Participating in meetings, conversations and communications with
 7 competitors to discuss the prices of DRAM to be sold to certain
 8 customers;
- 9 • Agreeing with their competitors to charge prices of DRAM at certain
 10 levels to be sold to certain customers;
- 11 • Issuing price quotations in accordance with the agreements reached;
 12 and
- 13 • Exchanging information on sales of DRAM to certain customers, for
 14 the purpose of monitoring and enforcing adherence to the agreed-upon
 15 prices.”

16 221. Another Samsung employee, Young Hwan Park pled guilty in December
 17 2006. This guilty plea covered the period April 1, 2001 until on or about June 15, 2002,
 18 wherein this individual conspired “to fix the prices of DRAM sold to certain OEMs.”
 19 Specifically, this individual was charged with:

- 20 • “Participating in meetings, conversations and communications with
 21 competitors to discuss the prices of DRAM to be sold to certain
 22 customers;
- 23 • Agreeing with their competitors to charge prices of DRAM at certain
 24 levels to be sold to certain customers;
- 25 • Issuing price quotations in accordance with the agreements reached;
- 26 • Exchanging information on sales of DRAM to certain customers, for
 27 the purpose of monitoring and enforcing adherence to the agreed-upon
 28 prices; and
- Directing subordinates to contact competitors to obtain DRAM pricing
 information for the purpose of fixing prices.”

29 222. In September 2006, Samsung’s Thomas Quinn pled guilty “to fix[ing] the
 30 prices of DRAM sold to certain OEMS.” Specifically, Quinn was charged with:

- participating in meetings, conversations, and communications in the United States and elsewhere to discuss the prices of DRAM to be sold to certain OEMs;
- agreeing, during those meetings, conversations, and communications, to charge prices of DRAM at certain levels to certain OEMs;
- issuing price quotations in accordance with the agreements reached;
- exchanging information on sales of DRAM to certain OEM customers, for the purpose of monitoring and enforcing adherence to the agreed-upon prices;
- authorizing, ordering, and consenting to the participation of subordinate employees in the conspiracy;
- participating in meetings, conversations, and communications in the United States and elsewhere to discuss coordinating (i.e., dividing up) a bid offered by Sun among themselves;
- agreeing, during those meetings, conversations, and communications, to coordinate a bid offered by Sun;
- coordinating, in accordance with the agreements reached, a bid offered by Sun among themselves, denying Sun a competitive price;
- participating in meetings, conversations, and communications to discuss the submission of prospective bids on one lot of 1 Gigabyte Next-Generation Modules offered by Sun;
- agreeing, during those meetings, conversations, and communications, to submit complementary bids to ensure the success of their agreement; and
- submitting complementary bids for one lot of 1 Gigabyte Next-Generation Modules, denying Sun a competitive price.

223. Hynix has acknowledged that at least 15 of its executives had contacts with competitors related to pricing or the DRAM market in general. Beyond these identified executives, plaintiffs have identified at least 25 additional Hynix personnel who were similarly immersed in the conspiracy.

224. In May 2005, Hynix Semiconductor, Inc. pled guilty and was fined \$185 million. The guilty plea covered the period April 1, 1999 to June 15, 2002, wherein Hynix “conspired to fix the prices of DRAM to certain computer and server manufacturers.” Hynix admitted that the affected customers included Dell, Compaq, Hewlett-Packard, Apple, IBM,

1 and Gateway. Specifically, Hynix was charged with:

- 2 • “Participating in meetings, conversations, and communications in the
3 United States and elsewhere to discuss the prices of DRAM to be sold
4 to certain customers;
- 5 • Agreeing, during those meetings, conversations, and communications,
6 to charge prices of DRAM at certain levels to be sold to certain
7 customers;
- 8 • Issuing price quotations in accordance with the agreements reached;
9 and
- 10 • Exchanging information on sales of DRAM to certain customers, for
11 the purpose of monitoring and enforcing adherence to the agreed-upon
12 prices.”

13 225. Hynix employees D.S. Kim, C.K. Chung, K.C. Suh and C.Y. Choi entered
14 guilty pleas in March of 2006. These guilty pleas covered various periods from as early as
15 April 1, 2001 until on or about June 15, 2002, and that these individuals “conspired to fix the
16 prices of DRAM to certain computer and server manufacturers.” Affected customers
17 included Dell, Compaq, Hewlett-Packard, Apple, IBM and Gateway. Specifically, these
18 individuals were charged with:

- 19 • “Participating in meetings, conversations, and communications in the
20 United States and elsewhere to discuss the prices of DRAM to be sold
21 to certain OEMs;
- 22 • Agreeing, during those meetings, conversations, and communications,
23 to charge prices of DRAM at certain levels to be sold to certain OEMs;
- 24 • Issuing price quotations in accordance with the agreements reached;
- 25 • Exchanging information on sales of DRAM to certain OEM
26 customers, for the purpose of monitoring and enforcing adherence to
27 the agreed-upon prices;
- 28 • Authorizing, ordering and consenting to participation of subordinate
employees in the conspiracy.”

226. Similarly, Infineon has acknowledged that at least 16 of its executives had
pricing-related contacts with DRAM competitors. Plaintiffs have identified 24 Infineon
personnel who were engaged in conspiratorial conduct.

227. Infineon Technology AG pled guilty on October 2004 and was fined \$160

1 million. The guilty plea covered the time period July 1, 1999 to June 15, 2002, wherein
 2 Infineon conspired “to fix the prices of DRAM sold to certain computer and server
 3 manufacturers.” Affected customers included Dell, Compaq, Hewlett-Packard, Apple, IBM
 4 and Gateway. Specifically, Infineon was charged with:

- 5 • “Participating in meetings, conversations, and communications in the
 6 United States and elsewhere to discuss the prices of DRAM to be sold
 to certain customers;
- 7 • Agreeing, during those meetings, conversations, and communications,
 8 to charge prices of DRAM at certain levels to be sold to certain
 customers;
- 9 • Issuing price quotations in accordance with the agreements reached;
 10 and
- 11 • Exchanging information on sales of DRAM to certain customers, for
 12 the purpose of monitoring and enforcing adherence to the agreed-upon
 prices.”

13 228. Four Infineon executives—Rudd Corwin, Heinrich Florian, Gunter Hefner
 14 and Peter Schaefer—pled guilty in December 2004. These guilty pleas covered various
 15 periods from as early as July 1, 2001 until on or about June 15, 2002, wherein these
 16 individuals participated “in an international conspiracy to fix prices in the DRAM market.”
 17 Specifically, these individuals were charged with:

- 18 • “Participating in meetings, conversations, and communications in the
 19 United States and elsewhere to discuss the prices of DRAM to be sold
 to certain customers;
- 20 • Agreeing, during those meetings, conversations, and communications,
 21 to charge prices of DRAM at certain levels to be sold to certain
 customers;
- 22 • Issuing price quotations in accordance with the agreements reached;
- 23 • Exchanging information on sales of DRAM to certain customers, for
 24 the purpose of monitoring and enforcing adherence to the agreed-upon
 prices; and
- 25 • Authorizing, ordering and consenting to participation of subordinate
 26 employees in the conspiracy.”

27 229. Plaintiffs have identified at least 50 Elpida employees who participated in
 28 conspiratorial conduct during the class period. Plaintiffs have identified at least 12 NEC

1 employees who participated in conspiratorial conduct during the class period.

2 230. In January 2006, Elpida pled guilty and, with its parent companies, NEC and
3 Hitachi, paid fines of \$84 million. The guilty plea covered the time period April 1, 1999 to
4 June 15, 2002, wherein Elpida conspired “to fix the prices of DRAM sold to certain
5 computer and server manufacturers.” Affected customers included Dell, Compaq, Hewlett-
6 Packard, Apple, IBM and Gateway. Specifically, Elpida was charged with:

- 7 • “Participating in meetings, conversations, and communications in the
8 United States and elsewhere with competitors to discuss the prices of
9 DRAM to be sold to certain customers;
10 • Agreeing, during those meetings, conversations, and communications,
11 to charge prices of DRAM at certain levels to be sold to certain
12 customers;
13 • Issuing price quotations in accordance with the agreements reached;
14 and
15 • Exchanging information on sales of DRAM to certain customers, for
16 the purpose of monitoring and enforcing adherence to the agreed-upon
17 prices.”

18 231. Moreover, Elpida was charged with and pled guilty to carrying out a bid-
19 rigging conspiracy by:

- 20 • “Participating in meetings, conversations, and communications in the
21 United States and elsewhere to discuss allocating (i.e., dividing up) a
22 bid offered by Sun among themselves;
23 • Agreeing, during those meetings, conversations, and communications
24 to allocate a bid offered by Sun;
25 • Allocating, in accordance with the agreements reached, a bid offered
26 by Sun among themselves, denying Sun a competitive price;
27 • Participating in meetings, conversations, and communications, to
28 submit complementary bids to ensure the success of their agreement;
and
 • Submitting complementary bids for one lot of a particular product,
denying Sun a competitive price.”

 232. D. James Sogas, an Elpida employee, pled guilty in December 2006. This
guilty plea covered the period April 1, 2001 until on or about June 15, 2002, wherein this
individual conspired “to fix the prices of DRAM sold to certain original equipment
manufacturers.” Specifically, this individual was charged with:

- “Participating in meetings, conversations and communications with competitors to discuss the prices of DRAM to be sold to certain customers, which led to agreements with his competitors to charge prices of DRAM at certain levels to be sold to certain customers;
- Issuing price quotations in accordance with the agreements reached;
- Exchanging information on sales of DRAM to certain customers, for the purpose of monitoring and enforcing adherence to agreed-upon prices; and
- Agreeing with competitors to coordinate bids submitted to Sun Microsystems, Inc.”

233. Plaintiffs have identified at least 16 Mosel employees who participated in conspiratorial conduct during the class period. Five Mosel executives have asserted their Fifth Amendment rights: Rajit Shah (Vice President of Worldwide Sales & Marketing); Ron Farrell (Manager, Product Marketing); Mohammed Iqbal (Director, Memory Products, Marketing); Kim Michael Ramirez (Manager, Strategic Marketing, Special DRAMs); and Nathan Handelsman (Market Research Analyst).

234. Plaintiffs have identified at least 10 Nanya employees who participated in conspiratorial conduct during the class period. Three Nanya executives have asserted their Fifth Amendment rights: Michael Walsh (Strategic Accounts Manager); David Dwyer (European Sales & Marketing Manager) and Brian Donahue (North America Sales & Marketing).

235. That this was a comprehensive conspiracy formulated at the highest levels of Defendants’ companies cannot be disputed--15 executives have been sentenced to prison terms ranging from four to ten months. Those executives include the Vice President of Sales for Elpida (D. James Sogas); the Senior Vice President and General Manager of Worldwide Sales and Marketing for Hynix (D.S. Kim); the Director of Global Strategic Accounts for Hynix (C.K. Chung); the Senior Manager and Vice President for Product Marketing and Vice President for Operations for Hynix (C.Y. Choi); the Vice President for Customer Marketing and Sales for Infineon (T. Rudd Corwin); the Vice President for Sales, Marketing and Logistics for Infineon (Heinrich Florian); the Vice President for Sales for Infineon (Gunter

1 Hefner); the Vice President for Marketing, Sales and Logistics for Infineon (Peter Schaefer);
 2 the Senior Manager of DRAM Sales for Samsung (S.W. Lee); the Associate Director of
 3 DRAM Marketing for Samsung (Yeongho Kang); the Sales Director for Samsung (Y.W.
 4 Lee); the Vice President of Marketing for Samsung (Thomas Quinn); and the Vice President
 5 of Sales for Samsung (Y.H. Park).

6 236. Two additional executives have been indicted; those proceedings are ongoing:
 7 against Gary Swanson (Hynix's Senior VP of Memory Sales and Marketing) and Young Bae
 8 Rha (Samsung's VP of Sales and Marketing for Memory Division).

9 237. Micron and its executives, except for the Regional Sales Manager, Alfred
 10 Censullo, all escaped criminal charges because Micron turned on its co-conspirators and
 11 entered into the Department of Justice's Corporate Leniency Program. Mr. Censullo plead
 12 guilty to an obstruction of justice charge, whereby Censullo admitted to having withheld and
 13 altered documents responsive to a grand jury subpoena served on Micron.

14 238. That Micron admitted to the DOJ its' participation in a conspiracy is not
 15 surprising: Micron has acknowledged that at least 31 of its executives and other employees
 16 had conspiratorial contacts with other Defendants, including Hynix, Infineon, Samsung,
 17 Elpida, Hitachi, NEC, Mosel Vitelic, Nanya, Winbond and Toshiba, with regard to at least
 18 the following customers: Apple, Dell, Compaq, IBM, Gateway, Sun, Cisco, Thomson,
 19 Seagate, Hewlett-Packard and Maxtor.

20 239. Despite the fact that Micron's amnesty application was accepted, Micron's
 21 Vice President of Worldwide Sales, Michael Sadler, took the Fifth Amendment at this
 22 deposition in this case. Mr. Sadler has reason to be concerned about his personal criminal
 23 liability—Mr. Sadler (who was promoted by Micron to VP of Worldwide Sales in 2000 and
 24 still holds that position today) was a major player in this conspiracy, including traveling the
 25 world to discuss inventory pullbacks, production decreases and prices with Micron's
 26 competitors around the globe. In addition, Mr. Sadler was copied on hundreds of internal
 27 emails from his direct and indirect reports, in which emails those employees discussed their
 28 illegal activities.

1 240. Defendants misled the public about the reasons for these prices price
2 increases. For example, on December 18, 2001, Micron's Vice President of Sales, Michael
3 W. Sadler stated during an analyst conference call:

4 In the latter half of October we saw a significant uptake in demand and by
5 the first quarter of November this demand strength resulted in sharp spot
6 market price increases. The robust demand environment has continued
7 beyond the reporting period and today, market prices are trending up in
8 both the [spot] market and with OEM customers. The strengthening of the
9 business in this particular timeframe was not unexpected as we are in the
10 midst of the typical high point with respect to demand seasonality. . . .

11 241. In reality, price increases in the DRAM market were the result of careful
12 collaboration and manipulation by the DRAM manufacturers to "hide" the true availability of
13 DRAM and to coordinate supply restraints of DRAM on the spot market in order to raise
14 prices. Sadler was plainly aware of this fact as he himself was a major player within the
15 conspiracy.

16 242. On September 20, 2001, for example, Infineon's Peter Schaefer sent an email
17 to three of his superiors at Infineon. In that email, Schaefer details discussion with Michael
18 Sadler, in which Sadler told him in detail Micron's inventory and production levels,
19 including Micron's future plans for DRAM production. Specifically, Sadler told Schaefer
20 that Micron "would consider taking supply out of the market if others do the same; either by
21 reducing waferstarts or destroying all inventories."

22 243. An October 8, 2001 Micron email tells of a meeting between Sadler and
23 Samsung's Y.W. Lee. Among the topics discussed during this meeting was December
24 production reduction by Micron.

25 244. On October 24, 2001, Lionel Lim of Micron sent an internal email to a
26 number of other Micron employees, telling them that he had "Talked to Sammy [Samsung]
27 and they are still planning to limit their output to 8Millions per month."

28 245. On November 9, 2001 Mike Ridling of Micron stated in an internal email:
"We are limiting our customers volumes and we know that Samsung is doing the same."

 246. On November 13, 2001, Samsung noted internally that "[t]he recent increases

1 in spot market pricing is due to Micron and Infineon intentionally withholding product from
2 the spot market.” On that same day, Ron Mayhew of Elpida commented on how “Micron
3 and all others have cut back production, but they also have inventory...Real demand has not
4 changed.”

5 247. When the Hynix management team sought detailed information from Micron
6 in November, 2001, two executives were specifically directed to contact Sadler for
7 information related to sales, sales strategy, inventory, market forecast and other competitive
8 information.

9 248. In a December 2001 Elpida email, that Defendant admitted that demand did
10 not cause the price increase:

11 Unfortunately the dynamics are pretty much unrelated to true market
12 forces. There is no organic reason for prices to increase i.e., demand
13 increases. This is pure supply control. Suppliers are losing hundreds of
14 millions of dollars. As with any commodity business, the only way to fix
15 that is [to] correct the supply demand balance. Price increase cannot
16 happen naturally without first reducing supply. Since supply reduction
17 takes time and actually ADDs cost (low factory utilization), price changes
18 need to be forced to happen. Kind of like an airplane just raising prices.
19 Seats are still there and some may be empty but need to get back in the
20 black. (emphasis added)

21 249. Defendants created the appearance of lower available inventory by
22 withholding DRAM from their customers “inventory hubs.” Within a few days of each other
23 in November 2001, Infineon and Micron executives, including Mike Sadler, instructed their
24 people to pull inventory out of the inventory hubs so that their customers could not pull out
25 product before the next price increase, which Defendants were carefully planning for the next
26 negotiation cycle.

27 250. On March 21, 2002, Micron held its second quarter 2002 conference call.
28 During that call, Michael Sadler made the following statement about the past quarter, which
was December 2001 through February 2002: “With a strong demand and price recovery we
have substantially depleted our finished goods inventory and are now at minimum levels to
enable adequate performance. . . .”

251. Defendants attributed the price the price increase to an increase in demand,

1 rather than their conspiracy. In January 2002, the Economic Daily News suggested that
2 Nanya was colluding with Samsung to increase the prices of DRAM. In the Taipei Times, on
3 January 30, 2002, Nanya denied the allegations. In an interview with Nanya Technology
4 Corp.'s Vice President Moor Chen, Mr. Chen denied the allegations, stating that "Each
5 company has its own selling strategy," Chen said. Chen attributed the price increase of over
6 25% since November to the increase in demand for DRAM because of Windows XP and
7 Intel's new CPU chipset. Mr. Chen went on to say that most of the DRAM sold by Nanya
8 goes to big customers such as Dell and IBM.

9 252. In fact, and contrary to Mr. Chen's public denial, the reason for the price
10 increase to Dell, IBM and others was collusion with Samsung and other Defendants. For
11 example, on January 2, 2002, in an internal Samsung email, Mike Bocian wrote, in reference
12 to Dell SDRAM/DDR pricing, "Nanya confirmed they will be qualed next week and will
13 quote \$56."

14 253. In April 2002, Infineon reported that due to increased DRAM prices, revenues
15 had increased 34% for the first quarter ended March 31, 2002, compared with revenues the
16 previous quarter.

17 254. Following Michael Dell's assertion of "cartel-like behavior" by DRAM
18 manufacturers, Defendants quickly began formulating a response.

19 255. On May 1, 2002, in an internal Samsung email forwarding an article about
20 Mr. Dell's comments, Samsung's sales director wrote to his superiors, saying "This article
21 has already made interesting reading at our key accounts. I think SEC [Samsung] should
22 have a story/response to tell our key customers. As you can see from Apple management
23 email below, they will be looking for a response from us. I am sure this will be a topic at our
24 next round of customer visits."

25 256. On June 18, 2002, Micron announced that it had received a subpoena from the
26 DOJ in connection with an investigation into potential price-fixing in the DRAM market.
27 Micron denied any knowledge of DRAM price-fixing. Micron's Vice President of Corporate
28 Affairs Kipp Bedard said that Micron "does not believe it has violated U.S. antitrust laws"

1 and assured the public that “[t]he DRAM business is highly competitive.”

2 257. On June 25, 2002, Micron held its third quarter 2002 conference call. During
3 that call, Kipp Bedard of Micron lied about the reason for the price increases, despite
4 knowing the Micron had been subpoenaed the week before. In response to an analyst’s
5 question about the reason for the price increase, he said: “I can only speak from our
6 standpoint, and we’ve had enough inventory to feed into the spot market while prices have
7 been going up, so I don’t think there have been a lot of orders in the spot market that we
8 weren’t able to fill. So I—the only thing I contribute (sic) it to is demand.”

9 258. The misleading public statements created a likelihood of confusion with
10 respect to the real reasons DRAM prices were rising. By knowingly issuing public
11 pronouncements that were mere subterfuge, Defendants induced Plaintiffs’ purchases of
12 DRAM at prices that were artificially inflated.

13 **VIII. ACTIVE CONCEALMENT**

14 259. Throughout and beyond the conspiracy, Defendants and their co-conspirators
15 affirmatively and actively concealed their unlawful conduct from Plaintiffs. Defendants and
16 their co-conspirators conducted their conspiracy in secret and actively misled their direct
17 customers and the public about the reason for price increases.

18 260. Defendants and their co-conspirators publicly provided pre-textual and false
19 justifications regarding their price increases. Defendants and their co-conspirators conducted
20 their conspiracy in secret, concealed the true nature of their unlawful conduct and acts in
21 furtherance thereof, and actively concealed their activities through various other means and
22 methods to avoid detection. Plaintiffs did not discover, and could not have discovered
23 through the exercise of reasonable diligence, that Defendants and their co-conspirators were
24 violating the antitrust laws as alleged herein until shortly before class action litigation was
25 commenced against the Defendants in 2002.

26 261. To ensure the conspiracy’s effectiveness, Defendants extended the conspiracy
27 beyond the contract market and similarly conspired to artificially manipulate the DRAM spot
28 market.

262. As a result of the active concealment of the conspiracy by Defendants and their co-conspirators, any and all applicable statutes of limitations otherwise applicable to the allegations herein have been tolled.

IX. VIOLATIONS ALLEGED

First Claim for Relief

(Violation of Section 1 of the Sherman Act)

263. Plaintiffs incorporate and reallege, as though fully set forth herein, each and every allegation set forth in the preceding paragraphs of this Complaint.

264. Beginning at a time presently unknown to Plaintiffs, but at least as early as April 1, 1999, and continuing through at least December 31, 2002, the exact dates being unknown to Plaintiffs, Defendants and their co-conspirators entered into a continuing agreement, understanding, and conspiracy in restraint of trade to artificially raise, fix, maintain, and/or stabilize prices for DRAM in the United States, in violation of Section 1 of the Sherman Act, 15 U.S.C. § 1.

265. In formulating and carrying out the alleged agreement, understanding, and conspiracy, the Defendants and their co-conspirators did those things that they combined and conspired to do, including but not limited to the acts, practices, and course of conduct set forth above, and the following, among others:

- a. To fix, raise, maintain and stabilize the price of DRAM;
- b. To allocate markets for DRAM among themselves;
- c. To submit rigged bids for the award and performance of certain DRAM contracts; and
- d. To allocate among themselves the production of DRAM.

266. The combination and conspiracy alleged herein has had the following effects, among others:

- a. Price competition in the sale of DRAM has been restrained, suppressed, and/or eliminated in the United States;
- b. Prices for DRAM sold by Defendants and their co-conspirators have

1 for, DRAM at supra-competitive levels.

2 272. The aforesaid violations of Section 16720, California Business and
3 Professions Code, consisted, without limitation, of a continuing unlawful trust and concert of
4 action among the Defendants and their co-conspirators, the substantial terms of which were
5 to fix, raise, maintain and stabilize the prices of, and to allocate markets for, DRAM.

6 273. For the purpose of forming and effectuating the unlawful trust, the Defendants
7 and their co-conspirators have done those things which they combined and conspired to do,
8 including but in no way limited to the acts, practices and course of conduct set forth above
9 and the following:

- 10 a. to fix, raise, maintain and stabilize the price of DRAM;
- 11 b. to allocate markets for DRAM amongst themselves;
- 12 c. to submit rigged bids for the award and performance of certain DRAM
13 contracts; and
- 14 d. to allocate amongst themselves the production of DRAM.

15 274. The combination and conspiracy alleged herein has had, *inter alia*, the
16 following effects:

- 17 a. price competition in the sale of DRAM has been restrained, suppressed
18 and/or eliminated in the State of California and throughout the United
19 States;
- 20 b. prices for DRAM sold by Defendants and their co-conspirators have
21 been fixed, raised, maintained and stabilized at artificially high, non-
22 competitive levels in the State of California and throughout the United
23 States; and
- 24 c. those who purchased DRAM from Defendants and their co-
25 conspirators have been deprived of the benefit of free and open
26 competition.

27 275. Plaintiffs and the other members of the Class paid supra-competitive,
28 artificially inflated prices for DRAM.

276. As a direct and proximate result of Defendants' unlawful conduct, Plaintiffs and the members of the Class have been injured in their business and property in that they paid more for DRAM than they otherwise would have paid in the absence of Defendants' unlawful conduct. As a result of Defendants' violation of Section 16720 of the California Business and Professions Code, Plaintiffs seek treble damages and the costs of suit, including reasonable attorneys' fees, pursuant to Section 16750(a) of the California Business and Professions Code.

Third Claim for Relief

(Violation of the California Unfair Competition Law)

277. Plaintiffs incorporate and reallege, as though fully set forth herein, each and every allegation set forth in the preceding paragraphs of this Complaint.

278. Defendants' business acts and practices were centered in, carried out, effectuated and perfected mainly within the State of California, and Defendant's conduct within California injured all members of the Class throughout the United States. Therefore, this claim for relief under California law is brought on behalf of all members of the Class, whether or not they are California residents.

279. Beginning on a date unknown to Plaintiffs, but at least as early as April 1, 1999, and continuing thereafter at least up through and including December 31, 2002, Defendants committed and continue to commit acts of unfair competition, as defined by Sections 17200, *et seq.* of the California Business and Professions Code, by engaging in the acts and practices specified above.

280. This Claim is instituted pursuant to Sections 17203 and 17204 of the California Business and Professions Code, to obtain restitution from these Defendants for acts, as alleged herein, that violated Section 17200 of the California Business and Professions Code, commonly known as the Unfair Competition Law.

281. The Defendants' conduct as alleged herein violated Section 17200. The acts, omissions, misrepresentations, practices and non-disclosures of Defendants, as alleged herein, constituted a common continuous and continuing course of conduct of unfair

1 competition by means of unfair, unlawful and/or fraudulent business acts or practices within
 2 the meaning of California Business and Professions Code, Section 17200, *et seq.*, including,
 3 but not limited to, the following:

- 4 a. The violations of Section 1 of the Sherman Act, as set forth above;
- 5 b. The violations of Section 16720, *et seq.*, of the California Business and
 6 Professions Code, set above;
- 7 c. Defendants' acts, omissions, misrepresentations, practices and non-
 8 disclosures, as described above, whether or not in violation of Section
 9 16720, *et seq.* of the California Business and Professions Code, and
 10 whether or not concerted or independent acts, are otherwise unfair,
 11 unconscionable, unlawful or fraudulent;
- 12 d. Defendants' act and practices are unfair to consumers of DRAM in the
 13 State of California and throughout the United States, within the
 14 meaning of Section 17200, California Business and Professions Code;
 15 and
- 16 e. Defendants' acts and practices are fraudulent or deceptive within the
 17 meaning of Section 17200 of the California Business and Professions
 18 Code.

19 282. Plaintiffs and each of the Class members are entitled to full restitution and/or
 20 disgorgement of all revenues, earnings, profits, compensation and benefits which may have
 21 been obtained by Defendants as a result of such business acts or practices.

22 283. The illegal conduct alleged herein is continuing and there is no indication that
 23 Defendants will not continue such activity into the future.

24 284. The unlawful and unfair business practices of Defendants, and each of them,
 25 as described above, have caused and continue to cause Plaintiffs and the members of the
 26 Class to pay supra-competitive and artificially-inflated prices for DRAM. Plaintiffs and the
 27 members of the class suffered injury in fact and lost money or property as a result of such
 28 unfair competition.

1 restraint of trade in violation of Maine Rev. Stat. Ann. 10, §§1101 *et seq.*

2 295. By reason of the foregoing, Defendants have entered into agreements in
3 restraint of trade in violation of Michigan Comp. Laws. Ann. §§445.773 *et seq.*

4 296. By reason of the foregoing, Defendants have entered into agreements in
5 restraint of trade in violation of Minnesota Stat. §§325D.52 *et seq.*

6 297. By reason of the foregoing, Defendants have entered into agreements in
7 restraint of trade in violation of Mississippi Code Ann. §75-21-1 *et seq.*

8 298. By reason of the foregoing, Defendants have entered into agreements in
9 restraint of trade in violation of Nebraska Rev. Stat. §§59-801 *et seq.*

10 299. By reason of the foregoing, Defendants have entered into agreements in
11 restraint of trade in violation of Nevada Rev. Stat. Ann. §§598A *et seq.*

12 300. By reason of the foregoing, Defendants have entered into agreements in
13 restraint of trade in violation of New Mexico Stat. Ann. §§57-1-1 *et seq.*

14 301. By reason of the foregoing, Defendants have entered into agreements in
15 restraint of trade in violation of North Carolina Gen. Stat. §§75-1 *et seq.*

16 302. By reason of the foregoing, Defendants have entered into agreements in
17 restraint of trade in violation of North Dakota Cent. Code §§51-08.1-01 *et seq.*

18 303. By reason of the foregoing, Defendants have entered into agreements in
19 restraint of trade in violation of Ohio Rev. Code Ann. §1331.01 *et seq.*

20 304. By reason of the foregoing, Defendants have entered into agreements in
21 restraint of trade in violation of the Pennsylvania common law.

22 305. By reason of the foregoing, Defendants have entered into agreements in
23 restraint of trade in violation of South Dakota Codified Laws Ann. §§37-1-3.1 *et seq.* Part of
24 the conspiracy to restrain trade or commerce took place in South Dakota because, *inter alia*,
25 computer maker Gateway, Inc. was headquartered in South Dakota during the Class Period.

26 306. By reason of the foregoing, Defendants have entered into agreements in
27 restraint of trade in violation of Tennessee Code Ann. §§47-25-101 *et seq.*

28 307. By reason of the foregoing, Defendants have entered into agreements in

1 restraint of trade in violation of Vermont Stat. Ann. 9 §§2453 *et seq.*

2 308. By reason of the foregoing, Defendants have entered into agreements in
3 restraint of trade in violation of West Virginia §§47-18-1 *et seq.*

4 309. By reason of the foregoing, Defendants have entered into agreements in
5 restraint of trade in violation of Wisconsin Stat. §§133.01 *et seq.*

6 310. Class Members in each of the states listed above paid supra-competitive,
7 artificially inflated prices for DRAM. As a direct and proximate result of Defendants'
8 unlawful conduct, such members of the Class have been injured in their business and
9 property in that they paid more for DRAM than they otherwise would have paid in the
10 absence of Defendants' unlawful conduct.

11 311. As a result of Defendants' violations of the laws listed above, such Class
12 Members seek damages and the costs of suit, including reasonable attorneys' fees.

13 **Fifth Claim of Relief**

14 **(Violation of State Consumer Protection and Unfair Competition Laws)**

15 312. Plaintiffs incorporate and reallege, as though fully set forth herein, each and
16 every allegation set forth in the preceding paragraphs of this Complaint. Plaintiffs have
17 satisfied all notice requirements contained in any of the laws enumerated below.

18 313. Defendants engaged in unfair competition or unfair, unconscionable,
19 deceptive or fraudulent acts or practices in violation of the state consumer protection and
20 unfair competition statutes listed below.

21 314. Defendants have engaged in unfair competition or unfair or deceptive acts or
22 practices in violation of Alaska Stat. §§45.50.471 *et seq.*

23 315. Defendants have engaged in unfair competition or unfair or deceptive acts or
24 practices in violation of Arkansas Code §4-88-101 *et seq.*

25 316. Defendants have engaged in unfair competition or unfair or deceptive acts or
26 practices in violation of California Bus. & Prof. Code §17200 *et seq.*

27 317. Defendants have engaged in unfair competition or unfair or deceptive acts or
28 practices in violation of District of Columbia Code §28-3901 *et seq.*

1 318. Defendants have engaged in unfair competition or unfair or deceptive acts or
2 practices in violation of Florida Stat. §501.201 *et seq.*

3 319. Defendants have engaged in unfair competition or unfair or deceptive acts or
4 practices in violation of Hawaii Rev. Stat. §480 *et seq.*

5 320. Defendants have engaged in unfair competition or unfair or deceptive acts or
6 practices in violation of Idaho Code §48-601 *et seq.*

7 321. Defendants have engaged in unfair competition or unfair or deceptive acts or
8 practices in violation of Kansas Stat. §50-623 *et seq.*

9 322. Defendants have engaged in unfair competition or unfair or deceptive acts or
10 practices in violation of Louisiana Rev. Stat. §51:1401 *et seq.*

11 323. Defendants have engaged in unfair competition or unfair or deceptive acts or
12 practices in connection with DRAM that was indirectly purchased primarily for personal,
13 family, or household purposes in violation of 5 Maine Rev. Stat. §207 *et seq.*

14 324. Defendants have engaged in unfair competition or unfair or deceptive acts or
15 practices in violation of Montana Code §30-14-101 *et seq.*

16 325. Defendants have engaged in unfair competition or unfair or deceptive acts or
17 practices in violation of Nebraska Rev. Stat. §59-1601 *et seq.*

18 326. Defendants have engaged in unfair competition or unfair, unconscionable or
19 deceptive acts or practices in violation of New Mexico Stat. §57-12-1 *et seq.*

20 327. Defendants have engaged in unfair competition or unfair or deceptive acts or
21 practices in violation of New York Gen. Bus. Law §349 *et seq.* Specifically,

- 22 a. Defendants engaged in trade or commerce in New York;
- 23 b. Defendants and their co-conspirators secretly agreed to raise prices by
- 24 direct agreement on bids to customers located in New York and
- 25 through artificial supply restraints on the entire DRAM market;
- 26 c. New York consumers were targets of the conspiracy;
- 27 d. The secret agreements were not known to New York consumers;
- 28 e. Defendants omitted material information that made the statements

1 which they made materially misleading, and also made materially
 2 misleading affirmative statements about the real cause of price
 3 increases;

4 f. Because of Defendants' unlawful trade practices in the State of New
 5 York, Plaintiffs and other class members who indirectly purchased
 6 DRAM have been injured because they have paid more for DRAM
 7 than they would have paid in the absence of Defendants' unlawful
 8 trade acts and practices.

9 328. Defendants have engaged in unfair competition or unfair or deceptive acts or
 10 practices in violation of North Carolina Gen. Stat. §75-1.1 *et seq.*

11 329. Defendants have engaged in unfair competition or unfair or deceptive acts or
 12 practices in violation of Oregon Rev. Stat. §646.605 *et seq.*

13 330. Defendants have engaged in unfair competition or unfair or deceptive acts or
 14 practices in connection with DRAM that was indirectly purchased primarily for personal,
 15 family, or household purposes in violation of Rhode Island Gen. Laws. §6-13.1-1 *et seq.*
 16 Specifically,

- 17 a. Defendants engaged in trade or commerce in Rhode Island;
- 18 b. as alleged herein, Defendants engaged in acts or practices that were
 19 unfair or deceptive to natural persons purchasing DRAM for personal,
 20 family and household purposes;
- 21 c. as alleged herein, Defendants used methods, acts or practices which
 22 mislead or deceive members of the public in a material respect about
 23 the true reasons for the price of DRAM;
- 24 d. Rhode Island consumers were injured by Defendants' actions.

25 331. Defendants have engaged in unfair competition or unfair or deceptive acts or
 26 practices in violation of South Carolina Code Laws §39-5-10 *et seq.*

27 332. Defendants have engaged in unfair competition or unfair or deceptive acts or
 28 practices in violation of Utah Code §13-11-1 *et seq.*

1 permitted to retain the benefits conferred via overpayments by Plaintiffs and Class members
2 nationwide.

3 342. Plaintiffs seek disgorgement of all profits resulting from such overpayments
4 and establishment of a constructive trust from which Plaintiffs and Class members may seek
5 restitution.

6 **PRAYER FOR RELIEF**

7 WHEREFORE, Plaintiffs pray:

8 A. That the Court determine that the Sherman Act, state antitrust law, and state
9 consumer protection and/or unfair competition law claims alleged herein may be maintained
10 as a class action under Rule 23(a), (b)(2), and (b)(3) of the Federal Rules of Civil Procedure;

11 B. That the unlawful conduct, contract, conspiracy or combination alleged herein
12 be adjudged and decreed to be:

13 a. A restraint of trade or commerce in violation of Section 1 of the

14 Sherman Act, as alleged in the First Claim for Relief;

15 b. An unlawful combination, trust, agreement, understanding, and/or

16 concert of action in violation of the state antitrust laws identified in the
17 Second and Fourth Claims for Relief herein;

18 c. Violations of the state consumer protection and unfair competition

19 laws identified in the Third and Fifth Claims for Relief herein; and

20 d. Acts of unjust enrichment as set forth in the Sixth Claim for Relief

21 herein.

22 C. That Plaintiffs and the Class recover damages, as provided by federal and
23 state antitrust laws, and that a joint and several judgment in favor of Plaintiffs and the Class
24 be entered against the Defendants in an amount to be trebled in accordance with such laws;

25 D. That Defendants, their affiliates, successors, transferees, assignees, and the
26 officers, directors, partners, agents, and employees thereof, and all other persons acting or
27 claiming to act on their behalf, be permanently enjoined and restrained from in any manner:
28 (1) continuing, maintaining, or renewing the conduct, contract, conspiracy or combination

1 alleged herein, or from entering into any other conspiracy alleged herein, or from entering
 2 into any other contract, conspiracy or combination having a similar purpose or effect, and
 3 from adopting or following any practice, plan, program, or device having a similar purpose
 4 or effect; and (2) communicating or causing to be communicated to any other person engaged
 5 in the sale of DRAM, information concerning bids of competitors;

6 E. That Plaintiffs be awarded restitution, including disgorgement of profits
 7 obtained by Defendants as a result of their acts of unfair competition and acts of unjust
 8 enrichment;

9 F. That Plaintiffs and members of the Class be awarded pre- and post-judgment
 10 interest, and that that interest be awarded at the highest legal rate from and after the date of
 11 service of the initial complaint in this action;

12 G. That Plaintiffs and members of the Class recover their costs of this suit,
 13 including reasonable attorneys' fees as provided by law; and

14 H. That Plaintiffs and members of the Class have such other, further, and
 15 different relief as the case may require and the Court may deem just and proper under the
 16 circumstances.

17 Dated: February 27, 2008

Respectfully submitted,

19 By /s/ Craig C. Corbitt

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JURY TRIAL DEMAND

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiffs demand a trial by jury for all issues so triable.

Dated: February 27, 2008

Respectfully submitted,

By /s/ Craig C. Corbitt

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CERTIFICATE OF SERVICE

**IN RE DYNAMIC RANDOM ACCESS MEMORY (DRAM)
ANTITRUST LITIGATION SERVICE LIST
Case No. M-02-1486 PJH
MDL No. 1486**

I, Monica J. Steele, certify and declare under penalty of perjury that I: am a citizen of the United States; am over the age of 18 years; am employed by Zelle, Hofmann, Voelbel, Mason & Gette LLP, 44 Montgomery Street, Suite 3400, San Francisco, CA 94104, whose members are members of the State Bar of California and at least one of whose members is a member of the Bar of each Federal District Court within California; am not a party to or interested in the cause entitled upon the document to which this Certificate of Service accompanies; and that on February 27, 2008, I served a true and correct copy of the following document(s) in the manner indicated below:

1. THIRD AMENDED CLASS ACTION COMPLAINT



By USDC Live System-Documents Filing System: on all interested parties registered for e-filing.



(BY ELECTRONIC MAIL) I caused such document(s) to be emailed to the offices and/or to attorneys of offices of the attached list named addressee(s).

Dated: February 27, 2008

Signed /s/Monica J. Steele

Monica J. Steele

Legal Administrative Assistant/Paralegal
to Craig C. Corbitt

#3172385v1